ALSO IN OUR NEWS SECTION A communications user group hangs up after losing members. Drugstore operators hope doctors sign on to e-prescription system.

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PREPARING Generation Z

CAREERS IT managers give colleges and universities dismal grades when it comes to preparing students for corporate IT careers, according to a Computerworld survey. But some academic leaders are trying to do better. Page 41

Microsoft, Users Cope With Worms' Chaos

Top execs, rank and file pitch in to handle onslaught of calls

BY CAROL SLIWA
REDMOND, WASH.

The voice you heard at the other end of a customer service call to Microsoft Corp. during the past two weeks may not have belonged to one of the 4,500 specialists who are paid to do that job.

Even top executives pitched in to answer phones after an "all hands on deck" call went out to product teams on Aug. 12, a day after the W32.Blaster worm began afflicting the computers of companies and home users that hadn't applied a patch for the Windows vulnerability being exploited.

Microsoft's Product Support *Microsoft, page 13*

SECURITY THREATS

IT managers say they are being worn down by wave of attacks

BY JAIKUMAR VIJAYAN

Users scrambling to fend off a continuing barrage of malicious attacks last week expressed a growing sense of frustration over software vulnerabilities and the constant need to defend against new and increasingly sophisticated threats.

The attacks disrupted IT services at some large companies and prompted the U.S. Department of Homeland Security to issue an advisory relating to one of them.

"We are just very tired of this," said Eric Beasley, a network administrator at Baker Hill Corp., an application service provider in Carmel, Ind. *Users, page 13*

Blackout Tests Contingencies

Massive power outage reveals shortcomings of disaster recovery plans

BY LUCAS MEARIAN

The blackout that struck parts of the eastern U.S. and Canada 10 days ago exposed business continuity vulnerabilities in IT systems and the facilities that support them. And it refocused attention on funding disaster recovery projects, IT managers said.

"Following a disaster of this kind, there's always an opening of the checkbooks," said Ken Jurgensen, director of property management at Time Inc. in New York.

Mike Smith, chief technology officer at Forbes.com Inc. in New York, said he isn't sure that he will be seeing more money, but he has no doubt that the blackout will increase the amount of time CTOs spend on disaster recovery initiatives.

Analysts said data protection schemes worked almost flawlessly for most large companies hit by the power outage, which left 50 million people in the dark for more than 12 hours.

For example, Roberta Witty, vice president of research at Gartner Inc. in Stamford, Conn., said in a research note that a "fantastically low number" of IT shops was forced to move to disaster recovery facilities operated by SunGard Data Systems Inc. in order to keep systems operating. "The recovery efforts made by en- *Blackout, page 57*

[illegible] problem

Frankly Speaking: [illegible] the little things [illegible] your data center [illegible] blackout

MGM Data Center Move a Hit

Film studio's IT team directs relocation plan, avoids downtime

BY PATRICK THIBODEAU
LOS ANGELES

Metro-Goldwyn-Mayer Inc. owns the James Bond movie franchise. But the film studio and media company's real action hero may very well be the head of its data center.

MGM recently moved from Santa Monica, Calif., to a new high-rise here. In the lobby leading to the offices of the company's top executives are rows of golden Oscars. Carol Campbell, the senior vice president in charge of MGM's data center, isn't eligible for an Academy Award. But this spring, she directed one of MGM's biggest and most important productions: the relocation of its data center.

Moving employees and desktop systems was easy, Campbell said. But, she added, "the part that was challenging was *MGM, page 16*

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The world's fastest personal computer.

The new Power Mac® G5 is here. It's the world's fastest* personal computer, and the first with a 64-bit processor. At its heart are two revolutionary PowerPC G5 processors, running at speeds up to 2GHz. And since these are 64-bit processors, they can access up to 8GB of memory in the Power Mac G5, which is double the 4-gigabyte memory ceiling of every other PC in the world. The G5 processors also have the world's fastest frontside bus, running at 1 gigahertz, which gets data to the processor almost twice as fast as the 533-megahertz bus found in the next-fastest personal computer (a dual 3.06GHz Xeon machine).

The PowerPC G5 chip. The world's first 64-bit processor for personal computers.

SPECint_rate 2000: Integer calculations

SPECfp_rate 2000: Floating-point calculations

Independent tests show the Power Mac G5 edges out the competition an integer and blasts past them in floating-point.

In side-by-side speed tests using industry-standard benchmarks, the dual 2.0-gigahertz Power Mac G5 is up to 41% faster than both the fastest Pentium 4 and dual-processor Xeon workstation. And the results get even better when using real-world applications: the new Power Mac G5 runs Photoshop more than twice as fast as the fastest PCs. Further tests reveal there are similar gains across a wide range of applications, from music and video to science and mathematics.

The PowerPC G5 chip is based an IBM's highest-perfarmonce 64-bit supercomputer processors.

Impressed? We haven't even touched on the Power Mac G5's other features. Like its ultrahigh-bandwidth system architecture, featuring AGP 8X, PCI-X, FireWire® 800, Gigabit Ethernet, up to 500 gigabytes (yes, that's half a terabyte) of internal Serial ATA storage and a SuperDrive® for DVD authoring. All inside a stunning, professional-quality aluminum enclosure that features four discrete computer-controlled cooling zones for whisper-quiet operation. Together, they make the Power Mac G5 a true breakthrough in personal computing.

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CONTENTS

08.25.03

ETL: Preparation Is the Best Bet
In the Technology section: Extract, transform and load software is the foundation of a data warehouse. But preparatioo is the critical success factor, say IT pros like Argosy Gaming's Jasoo Fortenberry. **Page 25**

Hands On: Handhelds Try to Do It All
In the Technology section: We test five all-in-one handheld devices that offer a combination of e-mail, PDA, camera and cell phone features. Two are clear winners. **Page 30**

NEWS

6 **PeopleSoft announces** a "productivity pack" for its CRM applications in an effort to expedite installations of the software and connections to back-office systems.

6 **Dwindling membership leads** the Communications Managers Association to disband after 55 years in operation.

7 **Drugstores embrace** a new online prescription oetwork, but getting doctors connected could take years.

7 **SCO says it will revitalize** its Unix server operating system as a rival to Linux, adding a technology front to its attacks oo the opeo-source OS.

8 **Expand Networks** readies a pair of bandwidth-optimization devices.

12 **Q&A: Microsoft VP** Jim Allchin says the company will take a proactive approach in response to the Blaster worm and develop new security technologies.

12 **Microsoft plans** to extend mainstream support for Exchange Server 5.5.

14 **Gateway sets its sights on** corporate data centers by offering new servers, plus a low-end disk array and a rebranded tape library.

14 **Real-time data warehousing** is a hot topic, but not all analysis applications require instant data integration, says a panel of IT managers.

TECHNOLOGY

32 **QuickStudy: Tape Types.** Tape backs up your systems every day, but technologies vary in capacity and speed. Learn how the six most common tape-backup formats work, the maximum capacities they support, how fast they'll back up your data and where each works best.

34 **Security Manager's Journal: Knowledge Base Boosts IT Reports.** Mathias Thurman increases security staff productivity cheaply by implemeoting an open-source knowledge base program and building a simple SQL Server application to handle incideot reporting and tracking. Best of all, one of the products is free.

MANAGEMENT

41 **Careers: Preparing Generation Z.** Academia tries to forge closer ties with corporate CIOs, who want graduates to have more business experience.

44 **Q&A: Why Projects Fail.** Consultant Sue Young explains why project status reports are so rosy, why managers continue to fund losing efforts and why some projects are doomed from the start.

46 **'Big Bang' Works Best.** Trying to improve your supply chain operations? A new study says revamping the entire system yields a bigger ROI than making small changes along the way.

OPINIONS

8 **On The Mark: Mark Hall** gets lost on the Microsoft campus but learns security is the reason. It's also the reason for a new industry partnership.

20 **Maryfran Johnson** is horrified to learn that spam may ruin her online shopping fun. Luckily, readers have suggested proven ways to stop spam.

20 **Pimm Fox** claims that new collaboration tools for programmers will improve software quality. One such tool is also an online service.

21 **Dan Gillmor** argues that whatever you think about presidential hopeful Howard Dean, you can learn from his online operations.

37 **Robert Mitchell** says that if Microsoft wants to get serious about Windows security, it should slim down the bloated operating system.

49 **Tom Piselio** says companies can calculate IT spending based oo a hierarchy of needs that helps assess what's most important to the bottom line.

58 **Frankly Speaking: Frank Hayes** says there's no reason for your IT team to be in the dark ever again.

DEPARTMENTS/RESOURCES

At Deadline Briefs 6
News Briefs 8, 16
Letters 21
IT Careers 52
Company Index 56
How to Contact CW 56
Shark Tank 58

ONLINE

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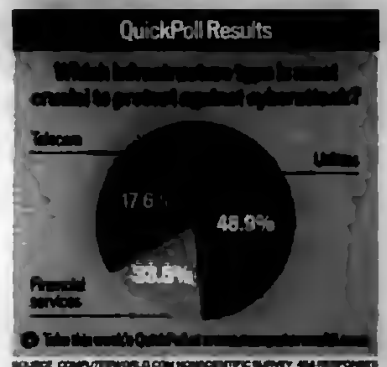

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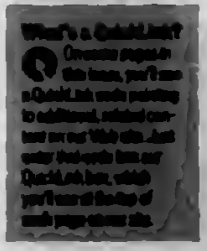
Q&A: Getting IT Security To Reach Company Goals
SECURITY: It's worthwhile to make sure you've aligned security efforts with the right corporate goals, columnist Marcia J. Wilson reports. QuickLink 40673

Four Steps to Successful Professional Membership
CAREERS: Mary Ann Wagner and Marguerete Luter offer advice on finding the professional association that's right for you and getting the most out of your involvement. QuickLink 40708



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QuickLink a1000

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QuickLink a1430

Knowledge Centers
QuickLink a2570

The Online Store
QuickLink a2420

CONTENTS

08.25.03

ETL: Preparation Is the Best Bet

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DEPARTMENTS/RESOURCES

At Deadline Briefs 6
News Briefs 8, 16
Letters 21
IT Careers 52
Company Index 56
How to Contact CW 56
Shark Tank 58

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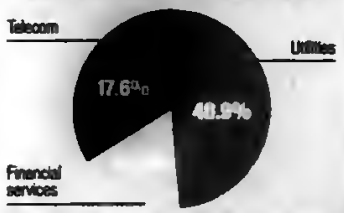

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QuickLink a2420

AT DEADLINE

Novell Reports Loss, Makes Cutbacks

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PeopleSoft Aims to Ease CRM Rollouts

Tools in 'productivity pack' designed to expedite connections to back-office apps

BY MARC L. SONGINI

As IT CONTINUES to try to fend off Oracle Corp.'s hostile takeover bid, PeopleSoft Inc. is readying the release of software that's designed to ease the installation and integration of its CRM applications for corporate users.

Pleasanton, Calif.-based PeopleSoft this week plans to announce the PeopleSoft CRM 8.8 Productivity Pack, which includes new technology plus enhancements of some existing functionality. For example, the company said that in an effort to help IT managers speed up PeopleSoft CRM deployments, it's adding integration tools with prebuilt plumbing that will let users quickly connect their customer-facing applications to back-office systems from rivals like Oracle and SAP AG.

The new tools are built on top of PeopleSoft's AppConnect integration technology. But they add business process and data-routing features for linking the CRM applications with finance or supply chain management systems to support complex transactions, such as order processing or field service requests, said Andrew Leigh, senior product marketing manager for the PeopleSoft CRM software.

Hands-off Approach

Also coming is an Infosync Server application, which will be designed to let servers running PeopleSoft CRM automatically exchange customer-related data updates via systems equipped with Microsoft Outlook nr Lotus Notes, eliminating the need for manual intervention by users.

PeopleSoft's new capabilities might offer a great way to improve the CRM installation process, said Mark Federle, CIO at The Weitz Co., a Des Moines-based construction contractor. CRM projects can give IT managers "a black eye"

because cost overruns often result when implementation teams are unable to fulfill deadline promises, he noted.

Weitz runs a hosted installation of J.D. Edwards & Co.'s OneWorld XE applications, which are now owned by PeopleSoft. Federle said he also is considering an installation of J.D. Edwards' CRM software.

PeopleSoft last month completed a friendly buyout of Denver-based J.D. Edwards, a deal announced just days before Oracle launched its unsolicited bid for PeopleSoft. At a meeting in New York next week, PeopleSoft is expected to unveil a road map for integrating its products with J.D. Edwards' applications.

The streamlined installation capabilities being announced by PeopleSoft should appeal to existing users that have burning integration issues, but they probably won't sway potential customers that have already been put off by the Oracle/PeopleSoft battle, said Laura Preslan, an analyst at AMR Research Inc. in Boston. What would really help drive increased sales for PeopleSoft is seeing Oracle's acquisition bid get "laid to rest," she added.

Telecom User Group Votes to Disband

55-year-old CMA hurt by dwindling membership

BY MATT HAMBLEN

The Communications Managers Association (CMA) last week said its board has voted to cease operations of the New York-based user group, which was formed in 1948.

At the group's peak in the late 1990s, about 150 large companies were members, and they paid up to $600 annually for the right to send three employees to monthly educational meetings, said CMA President Bill Moore. The CMA also held annual meetings in New York that drew hundreds of IT and telecommunications professionals looking to learn about new technologies and government regulations.

Moore said several factnrs led to the decision to disband, including a steady membership drop that began in 2000 and culminated when a recent membership renewal drive brought only one response. The CMA has about $10,000 in its treasury, and the group's six-member board will hold a final meeting Sept. 25 to discuss donating the funds to a charity, said Moore, who is telecommunications manager at the Museum of Modern Art in New York and heads the CMA on a volunteer basis.

Hard Times

These are tough times for many IT trade shows and conferences, although some user groups and industry associations are flourishing. Moore said he might join the Wall Street Technology Association, another New York-based group that has taken in some CMA members in the past.

The Technology Managers Forum, also in New York, is entering its 10th year of operations and has 400 members, dozens of corporate sponsors and three full-time staffers, said Priscilla Tate, its founder and executive director.

Jim Luisi, executive director of the Society for Information Management (SIM) in Chicago, said that despite the slowdown in IT spending, his group's membership has recently grown by more than 10%. SIM has nearly 3,000 members and 28 chapters. "One important factor [in staying successful] is being relevant to your constituency," Luisi noted.

Colleen Boothby, an attorney at Levine, Blaszak, Block and Boothby LLP in Washington, has spoken about regulatory issues at CMA events and called the group's demise "very sad." Corporate executives face an "eternal dilemma" over whether they should pay association membership fees and give IT workers time to attend events that don't directly affect the corporate bottnm line, Boothby said.

But the training offered by user groups can yield savings on IT investments, she added. For example, the Ad Hoc Telecommunications Users Committee, a Washington-based association of 20 companies that Boothby represents, estimates that every dollar spent by the group results in $100 in telecommunications savings for its members.

Drugstores Embrace E-prescription System

But it could take years for doctors to get connected

BY BOB BREWIN

Half of the 55,000 pharmacies in the U.S. are due to be connected to an electronic prescription system by year's end as part of a nationwide rollout that's being announced today by SureScripts, a technology company founded by two drugstore industry associations.

The SureScripts Messenger Services system, which will be formally launched at a drugstore conference in Philadelphia, has been beta-tested by a group of doctors and pharmacies in Rhode Island for the past two years. SureScripts said it will use a private frame-relay network and messaging software based on Microsoft Corp.'s .Net technology and XML to securely transmit prescription data between physicians and pharmacists.

Jim Smith, senior vice president of health care services at CVS Inc. in Woonsocket, R.I., said the network eventually should provide the IT infrastructure needed to electronically process prescriptions written by doctors throughout the U.S. He added that the SureScripts technology will create efficiencies for both doctors and pharmacies, compared with the current use of paper-based prescriptions.

Million-Dollar Question

But how to hook up doctors to the network is "the million-dollar question," said Rick Ratliff, executive vice president of technology and alliances at Alexandria, Va.-based SureScripts.

The company wants to sign up a stable of electronic prescription software vendors and certify that their applications are interoperable with the new network, Ratliff said. But so far, SureScripts has certified only one software vendor, InstantDx LLC in Gaithersburg, Md.

Mark Bard, an analyst at Manhattan Research LLC in New York, predicted that only about 25% to 30% of the country's doctors will be tied into the SureScripts network by 2005 or 2006. Setting up a nationwide electronic prescription system could cost the health care industry a total of $150 million, Bard said.

Ratliff agreed with Bard's timeline and said SureScript's initial goal is to sign up doctors he described as being "heavy prescribers."

Not only will there be challenges in getting doctors connected to the network, but drugstore chains may also have to make IT changes in order to accommodate SureScripts. For example, Smith said that CVS had to modify its back-end systems before it could connect to the network. He declined to disclose how much it cost the company to make the changes, but he said use of the network should produce cost savings over time.

But even more important is the expectation that automating the prescription process will reduce medical errors and free pharmacists to spend more time with customers, Smith said. He added that the SureScripts network will fully comply with the data privacy and security requirements of the federal Health Insurance Portability and Accountability Act.

In addition to CVS, the electronic prescription initiative is being backed by other large companies that belong to the National Association of Chain Drug Stores, as well as independent store operators that are represented by the National Community Pharmacists Association, according to Smith.

SureScripts is using frame-relay networks operated by AT&T Corp. and Sprint Corp. to set up its private network. The network will connect medical practice management systems in doctors' offices to SureScripts' systems and then to pharmacy back-office applications, which will route prescriptions to the appropriate drugstores, Ratliff said.

SureScripts Messenger Services

- The message data format used by SureScripts is based on the National Council for Prescription Drug Programs Script 4.2 standard, which supports the electronic transmission of prescriptions.
- Microsoft .Net and XML are being used as the underlying technologies for SureScripts' messaging software in an effort to ensure that it can communicate with various back-office systems.
- NDCHealth Corp., an Atlanta-based vendor of both pharmacy and medical practice management systems, is hosting SureScripts' applications at its data center.

SCO Vows to Revitalize Its Unix Product as Linux Rival

BY TODD R. WEISS

The SCO Group Inc., which began a legal attack against Linux in March, last week announced plans to rebuild its Unix operating system line next year in a bid to make the software a more viable alternative to Linux technology.

Users and resellers who attended the company's SCO Forum conference in Las Vegas said they were heartened by the release of the development road map, adding that it addressed many of the concerns they had about the future of SCO Unix following several years of neglect and ownership changes.

But many IT managers whose companies don't already use SCO Unix said in telephone interviews or via e-mail that SCO's legal assault on Linux — which includes a lawsuit against IBM and threats to sue users of the open-source operating system — have left them unwilling to even consider the company's technology.

"I have no intentions of ever doing business with SCO," said Chad Wilson, a computer support analyst at an Ohio-based hospital that runs Windows servers as well as some Linux and IBM AIX systems. "Basically, with their tactics, they hurt their chance of getting a future customer."

Ronald Edge, manager of information systems at Indiana University's Intercollegiate Athletics Department in Bloomington, was even more blunt. "I feel a harsh, bitter Norwegian cold equivalent to hell toward SCO," Edge said.

Beyond SCO's legal actions and threats, the dearth of new Unix development by the company in recent years makes it difficult to trust its new product-release road map, he noted.

Darl McBride, SCO's president and CEO, acknowledged in an interview that the Lindon, Utah-based company's Unix technology needs to be revitalized. "It's like a house that hasn't been maintained in a few years," McBride said. "We're going to come back and spruce the place up."

The plans include the shipment next year of a more fully featured operating system, code-named SCO OpenServer Legend, plus other new technologies. McBride said he hopes the new releases will convince users that SCO is still a good bet for the future.

A Unix administrator at a California-based supermarket chain, who asked that she not be named, said at the SCO Forum conference that she's glad to see SCO once again diving into Unix development. The chain recently began testing key applications on Windows NT in case it had to move off of SCO OpenServer, but the administrator said she'll now recommend that the testing be scaled back.

"We should hang in [with SCO]," she said. "What they've got coming is great."

"I'd say I still have some concerns about the legal issues going on," said the vice president of IT at a Fortune 500 manufacturer based in the Midwest, who also asked not to be identified. But, he added, "I do feel better than I did. They're definitely building on the product, so that makes me much more comfortable over the medium term. The long term is the question mark."

Stacey Quandt, an independent operating systems analyst in Santa Clara, Calif., said the success of SCO's updated product line will largely depend on its adoption by independent software vendors.

"There is a limit to the number of ISVs who will support these products," Quandt said. "It remains to be seen."

AT DEADLINE

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BY MARC L. SONGINI

As IT CONTINUES to try to fend off Oracle Corp.'s hostile takeover bid, PeopleSoft Inc. is readying the release of software that's designed to ease the installation and integration of its CRM applications for corporate users.

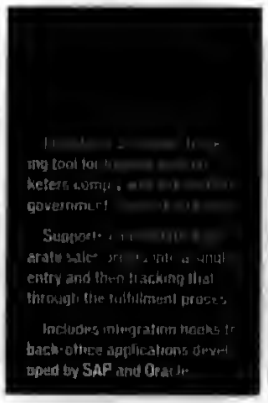
Pleasanton, Calif.-based PeopleSoft this week plans to announce the PeopleSoft CRM 8.8 Productivity Pack, which includes new technology plus enhancements of some existing functionality. For example, the company said that in an effort to help IT managers speed up PeopleSoft CRM deployments, it's adding integration tools with prebuilt plumbing that will let users quickly connect their customer-facing applications to back-office systems from rivals like Oracle and SAP AG.

The new tools are built on top of PeopleSoft's AppConnect integration technology. But they add business process and data-routing features for linking the CRM applications with finance or supply chain management systems to support complex transactions, such as order processing or field service requests, said Andrew Leigh, senior product marketing manager for the PeopleSoft CRM software.

Hands-off Approach

Also coming is an Infosync Server application, which will be designed to let servers running PeopleSoft CRM automatically exchange customer-related data updates via systems equipped with Microsoft Outlook or Lotus Notes, eliminating the need for manual intervention by users.

PeopleSoft's new capabilities might offer a great way to improve the CRM installation process, said Mark Federle, CIO at The Weitz Co., a Des Moines-based construction contractor. CRM projects can give IT managers "a black eye" because cost overruns often result when implementation teams are unable to fulfill deadline promises, he noted.



Weitz runs a hosted installation of J.D. Edwards & Co.'s OneWorld XE applications, which are now owned by PeopleSoft. Federle said he also is considering an installation of J.D. Edwards' CRM software.

PeopleSoft last month completed a friendly buyout of Denver-based J.D. Edwards, a deal announced just days before Oracle launched its unsolicited bid for PeopleSoft. At a meeting in New York next week, PeopleSoft is expected to unveil a road map for integrating its products with J.D. Edwards' applications.

The streamlined installation capabilities being announced by PeopleSoft should appeal to existing users that have burning integration issues, but they probably won't sway potential customers that have already been put off by the Oracle/PeopleSoft battle, said Laura Preslan, an analyst at AMR Research Inc. in Boston. What would really help drive increased sales for PeopleSoft is seeing Oracle's acquisition bid get "laid to rest," she added.

Telecom User Group Votes to Disband

55-year-old CMA hurt by dwindling membership

BY MATT HAMBLEN

The Communications Managers Association (CMA) last week said its board has voted to cease operations of the New York-based user group, which was formed in 1948.

At the group's peak in the late 1990s, about 150 large companies were members, and they paid up to $600 annually for the right to send three employees to monthly educational meetings, said CMA President Bill Moore. The CMA also held annual meetings in New York that drew hundreds of IT and telecommunications professionals looking to learn about new technologies and government regulations.

Moore said several factors led to the decision to disband, including a steady membership drop that began in 2000 and culminated when a recent membership renewal drive brought only one response. The CMA has about $10,000 in its treasury, and the group's six-member board will hold a final meeting Sept. 25 to discuss donating the funds to a charity, said Moore, who is telecommunications manager at the Museum of Modern Art in New York and heads the CMA on a volunteer basis.

Hard Times

These are tough times for many IT trade shows and conferences, although some user groups and industry associations are flourishing. Moore said he might join the Wall Street Technology Association, another New York-based group that has taken in some CMA members in the past.

The Technology Managers Forum, also in New York, is entering its 10th year of operations and has 400 members, dozens of corporate sponsors and three full-time staffers, said Priscilla Tate, its founder and executive director.

Jim Luisi, executive director of the Society for Information Management (SIM) in Chicago, said that despite the slowdown in IT spending, his group's membership has recently grown by more than 10%. SIM has nearly 3,000 members and 28 chapters. "One important factor [in staying successful] is being relevant to your constituency," Luisi noted.

Colleen Boothby, an attorney at Levine, Blaszak, Block and Boothby LLP in Washington, has spoken about regulatory issues at CMA events and called the group's demise "very sad." Corporate executives face an "eternal dilemma" over whether they should pay association membership fees and give IT workers time to attend events that don't directly affect the corporate bottom line, Boothby said.

But the training offered by user groups can yield savings on IT investments, she added. For example, the Ad Hoc Telecommunications Users Committee, a Washington-based association of 20 companies that Boothby represents, estimates that every dollar spent by the group results in $100 in telecommunications savings for its members.

Drugstores Embrace E-prescription System

But it could take years for doctors to get connected

BY BOB BREWIN

Half of the 55,000 pharmacies in the U.S. are due to be connected to an electronic prescription system by year's end as part of a nationwide rollout that's being announced today by SureScripts, a technology company founded by two drugstore industry associations.

The SureScripts Messenger Services system, which will be formally launched at a drugstore conference in Philadelphia, has been beta-tested by a group of doctors and pharmacies in Rhode Island for the past two years. SureScripts said it will use a private frame-relay network and messaging software based on Microsoft Corp.'s .Net technology and XML to securely transmit prescription data between physicians and pharmacists.

Jim Smith, senior vice president of health care services at CVS Inc. in Woonsocket, R.I., said the network eventually should provide the IT infrastructure needed to electronically process prescriptions written by doctors throughout the U.S. He added that the SureScripts technology will create efficiencies for both doctors and pharmacies, compared with the current use of paper-based prescriptions.

Million-Dollar Question

But how to hook up doctors to the network is "the million-dollar question," said Rick Ratliff, executive vice president of technology and alliances at Alexandria, Va.-based SureScripts.

The company wants to sign up a stable of electronic prescription software vendors and certify that their applications are interoperable with the new network, Ratliff said. But so far, SureScripts has certified only one software vendor, InstantDx LLC in Gaithersburg, Md.

Mark Bard, an analyst at Manhattan Research LLC in New York, predicted that only about 25% to 30% of the country's doctors will be tied into the SureScripts network by 2005 or 2006. Setting up a nationwide electronic prescription system could cost the health care industry a total of $150 million, Bard said.

Ratliff agreed with Bard's timeline and said SureScript's initial goal is to sign up doctors he described as being "heavy prescribers."

Not only will there be challenges in getting doctors connected to the network, but drugstore chains may also have to make IT changes in order to accommodate SureScripts. For example, Smith said that CVS had to modify its back-end systems before it could connect to the network. He declined to disclose how much it cost the company to make the changes, but he said use of the network should produce cost savings over time.

But even more important is the expectation that automating the prescription process will reduce medical errors and free pharmacists to spend more time with customers, Smith said. He added that the SureScripts network will fully comply with the data privacy and security requirements of the federal Health Insurance Portability and Accountability Act.

In addition to CVS, the electronic prescription initiative is being backed by other large companies that belong to the National Association of Chain Drug Stores, as well as independent store operators that are represented by the National Community Pharmacists Association, according to Smith.

SureScripts is using frame-relay networks operated by AT&T Corp. and Sprint Corp to set up its private network. The network will connect medical practice management systems in doctors' offices to SureScripts' systems and then to pharmacy back-office applications, which will route prescriptions to the appropriate drugstores, Ratliff said.

SureScripts Messenger Services

- The message data format used by SureScripts is based on the **National Council for Prescription Drug Programs Script 4.2 standard**, which supports the electronic transmission of prescriptions.
- **Microsoft .Net and XML** are being used as the underlying technologies for SureScripts' messaging software in an effort to ensure that it can communicate with various back-office systems.
- **NDCHealth Corp.**, an Atlanta-based vendor of both pharmacy and medical practice management systems, is hosting SureScripts' applications at its data center.

SCO Vows to Revitalize Its Unix Product as Linux Rival

BY TODD R. WEISS

The SCO Group Inc., which began a legal attack against Linux in March, last week announced plans to rebuild its Unix operating system line next year in a bid to make the software a more viable alternative to Linux technology.

Users and resellers who attended the company's SCO Forum conference in Las Vegas said they were heartened by the release of the development road map, adding that it addressed many of the concerns they had about the future of SCO Unix following several years of neglect and ownership changes.

But many IT managers whose companies don't already use SCO Unix said in telephone interviews or via e-mail that SCO's legal assault on Linux — which includes a lawsuit against IBM and threats to sue users of the open-source operating system — have left them unwilling to even consider the company's technology.

"I have no intentions of ever doing business with SCO," said Chad Wilson, a computer support analyst at an Ohio-based hospital that runs Windows servers as well as some Linux and IBM AIX systems. "Basically, with their tactics, they hurt their chance of getting a future customer."

Ronald Edge, manager of information systems at Indiana University's Intercollegiate Athletics Department in Bloomington, was even more blunt. "I feel a harsh, bitter Norwegian cold equivalent to hell toward SCO," Edge said.

Beyond SCO's legal actions and threats, the dearth of new Unix development by the company in recent years makes it difficult to trust its new product-release road map, he noted.

McBRIDE hopes the new release will assure users that SCO is viable.

Darl McBride, SCO's president and CEO, acknowledged in an interview that the Lindon, Utah-based company's Unix technology needs to be revitalized. "It's like a house that hasn't been maintained in a few years," McBride said. "We're going to come back and spruce the place up."

The plans include the shipment next year of a more fully featured operating system, code-named SCO OpenServer Legend, plus other new technologies. McBride said he hopes the new releases will convince users that SCO is still a good bet for the future.

A Unix administrator at a California-based supermarket chain, who asked that she not be named, said at the SCO Forum conference that she's glad to see SCO once again diving into Unix development. The chain recently began testing key applications on Windows NT in case it had to move off of SCO OpenServer, but the administrator said she'll now recommend that the testing be scaled back.

"We should hang in [with SCO]," she said. "What they've got coming is great."

"I'd say I still have some concerns about the legal issues going on," said the vice president of IT at a Fortune 500 manufacturer based in the Midwest, who also asked not to be identified. But, he added, "I do feel better than I did. They're definitely building on the product, so that makes me much more comfortable over the medium term. The long term is the question mark."

Stacey Quandt, an independent operating systems analyst in Santa Clara, Calif., said the success of SCO's updated product line will largely depend on its adoption by independent software vendors.

"There is a limit to the number of ISVs who will support these products," Quandt said. "It remains to be seen."

PLANNED FEATURES

SCO OpenServer Legend

- Increased support for databases and Java technology
- Security enhancements
- Expanded compatibility with Windows
- Support for open-source applications, such as the Apache Web server and Mozilla browser
- Deep integration with SCO's new SCOx Web services technology

BRIEFS

Dell Cuts Pricing On PCs, Servers

Dell Inc. announced price cuts on a broad range of its products, including the OptiPlex PCs and PowerEdge servers intended for corporate users. For example, Dell said the price of the four-CPU PowerEdge 6600 is being reduced by 22%, to about $9,900. Dell has been feeling some pricing pressure from IBM and other server rivals, said Illuminata Inc. analyst Gordon Haff.

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Microsoft Corp. said users of its instant messaging (IM) software will be blocked from logging on unless they upgrade to the latest releases by Oct. 15. Users of MSN Messenger and Windows Messenger need to upgrade because of "security issues" with older versions, Microsoft said. The plan could also affect users of third-party software that can consolidate multiple messaging accounts within a single client.

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. . . on its sprawling campus headquarters by no longer distributing maps to visitors "for security reasons," according to a harried PR person telling lost and bewildered journalists how to navigate the large network of seemingly randomly numbered buildings. But security for the massive installed base of **aging Microsoft products elsewhere in the world remains at risk,** worries Jonathan Perera, senior director in Microsoft's security business unit. He shakes his head sorrowfully as he observes that "45% to 48% of Windows servers in the world are running Windows NT 4.0," which he points out was released in 1996 and designed in 1993-94, giving the advantage to nefarious hackers who "have had 10 years to learn new attack techniques." But the good guys will be getting an extra tool later this quarter, when Microsoft releases its Security Configuration Wizard, which the vendor claims will let sysadmins set security policies on a server once and quickly replicate them across other machines on their networks. **Even better is the price: $0.** • The folks at SecurityProfiling Inc. in Lafayette, Ind., will be shipping a similar tool in September. The Policy Compliance and Enforcement add-on module to the company's SysUpdate software is designed to give admins central control over security settings on computers across their networks. What's more, it will let your IT staffers **remotely shut off features being used by crackers** during an attack on your network. That way, claims CTO Brett Oliphant, you can keep most of your systems running and have time to test patches before rolling them into your production environment. • Think your network is being probed by digital bandits seeking to shut you down? Well, maybe **the intruders are from the Recording Industry Association of America,** who are on an inspired mission to root out every major source of free recordings on peer-to-peer networks. According to Peter Coppola, vice president of marketing at Akonix Systems Inc. in San Diego, the RIAA uses legal probes to track the source IP addresses for distributors of illegal P2P-based tunes. Think your network is clean? Just in case, you can run Akonix's Rogue Aware software (*www.akonix.com/products/rogueaware.asp*), a free tool now in its 1.5 release that **sniffs out unsanctioned P2P and instant messaging traffic.** And this fall, Akonix will upgrade its L7 Enterprise IM application for corporate users. The new version will include enhancements for content-filtering and offer improved integration with Active Directory and other LDAP repositories. • Government security initiatives have spurred a partnership between Open Harbor Inc. in San Carlos, Calif., and GT Nexus Inc. in nearby Alameda that will be announced this week. The deal's main attraction is that the two vendors have integrated their respective applications so that companies can **manage their extended supply chains,** which is GT Nexus' area of expertise, and present customs officials with documents proving that the goods arriving at U.S. ports of entry comply with all the new security provisions, which is Open Harbor's domain. Beth Petersen, a vice president at Open Harbor, says the 24-hour rule (*www.customs.ustreas.gov/xp/cgov/import/carriers/24hour_rule/*), which requires importers to file correct documentation about goods bound for the U.S. at least a day before they're loaded onto ships, can have a devastating effect on a company's supply chain if the paperwork isn't properly prepared. U.S. Customs has already **stopped shipment on hundreds of containers with botched filings.** The integrated hosted software will have a single messaging system for notifying supply chain managers of the progress of shipments or any disruptions. Says Greg Johnsen, vice president of marketing at GT Nexus, if shippers fail to police themselves, "the government may step in even more and may make it so restrictive that importers may see higher costs from controls and delays."

Microsoft, unlike some vendors, continues to upgrade its products for the Macintosh. Expect to see an upgrade to its popular [illegible] next month for Mac OS X's Jaguar release. There's no charge for the client. The company also says its Microsoft Office for the Mac will "track" the next release of Office for Windows. On the subject of Office, Microsoft will ship [illegible] on Sept. 8 to help programmers write Web services for the desktop productivity suite.

Vendor Adds Bandwidth Expansion Devices

BY MATT HAMBLEN

Expand Networks Inc. today will announce two networking appliances that support bandwidth expansion capabilities, an emerging technology that gives IT managers an alternative to ordering bigger network pipes.

Roseland, N.J.-based Expand is rolling out the Accelerator 4810 and 6810 devices and said the latter will support WAN speeds ranging from 2M to 45Mbit/sec. at up to 100 sites.

Auto parts retailer O'Reilly Automotive Inc. is considering an investment in the new equipment, after installing Expand's older Accelerator 6800 in April to handle the mirroring of corporate data from its headquarters in Springfield, Mo., to a backup data center in Dallas, said Mark Garton, information systems disaster recovery team leader at O'Reilly.

The retailer operates more than 1,000 stores in 17 states, plus 11 distribution centers. Garton said the April installation allowed O'Reilly to do the data mirroring on one T3 network link instead of two, resulting in savings of more than $2,000 per month.

O'Reilly bought two of the 6800 devices at a cost of about $15,000 apiece, Garton said, adding that the new 6810 model might be used on the frame-relay links between O'Reilly's warehouses.

"When we first heard of this technology, they made some pretty big claims, but it has worked," Garton said.

The worldwide market for bandwidth compression and optimization products totaled only about $120 million last year, but it's growing fast, perhaps at an annual rate of 50%, said Peter Firstbrook, an analyst at Meta Group Inc. in Stamford, Conn. Expand controls about 80% of the market; its rivals include Peribit Networks Inc., Packeteer Inc. and ITWorx Inc., he said.

Peribit announced two new customers last week. One, London-based auto dealer Ryland Group PLC, said it's using the technology to cut bandwidth needs on WAN links among 30 locations.

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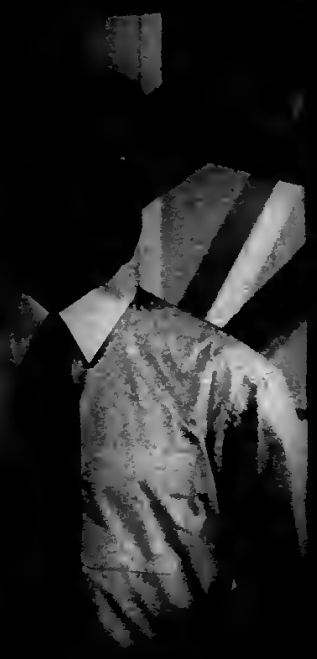
WHEN THE PERFORMANCE BAR GETS SE
WE RE THE ONES WHO RAISE IT

Delivering 100,000 searches will take two hours.



Introducing Microsoft Windows Server 2003 *D m r with less*

Software for the Agile Business

Microsoft

You don't have two hours.

Windows Server 2003

Microsoft Exec Vows To Fix What's Broken

BY CAROL SLIWA, ODN TENNANT AND MARK HALL
REDMOND, WASH.

The effects of the W32.Blaster worm have been felt throughout Microsoft Corp. during the past two weeks, but they have been particularly painful for **Jim Allchin**, *a self-described perfectionist. The vice president of Microsoft's platforms group spoke with* Computerworld *last week about security matters. Excerpts follow:*

What sorts of plans are you formulating to deal with the effects of the Blaster worm? I personally have spent a lot of time on this, because I think I've concluded that we have to take a different tack than what we've been taking. I have nothing to report now, but you can stay tuned because . . . I've had enough, and I'm going to do something about it. We have a team trying to propose some new approaches on this.

Are you talking about internally holding individuals or groups of engineers accountable for specific code vulnerabilities? No. All software has problems. We have to come at it with a different approach, and just stay tuned.

When analyzing the Blaster case, what did you find, beyond the fact that some people didn't install a patch a month ago? If everybody had the patch on in the entire universe, fine. But the question is: Can you really expect anybody to do that? I think that it's a very difficult proposition to expect people to do that perfectly. If it's done perfectly, you're home free, and frankly, I've talked to companies that did it perfectly.

Let's suppose you didn't. What are the downsides of having one hole? One machine gets into your environment, and you've got a problem. If your perimeter protection doesn't save you, then it's inside, and let's suppose there are just a few machines that haven't been patched for whatever reason. They were laptops, they never connected up to get the antivirus signatures, or whatever.

I think we're going to have to come at it from a different approach [than] expecting perfection by the distribution, even though we're going to give great distribution technology.

Is it something that we can expect to see this year or next year? I don't know.

But there will be some form of technology that you will offer to IT professionals? That's right

Will it be a separate product? I don't think a separate product.

Do you have that technology now and just need to implement it, or do you need to develop that technology? A combination. I think we can swing around to this pretty quickly.

Historically, Microsoft has released software products that weren't secure by default. How far are you willing to go? Is the company willing to lock the system down completely? There's lots of different answers to that. . . . The Internet Connection Firewall is in Windows XP. It has been in there all along.

Why is it that people haven't turned it on? Well, we didn't communicate it well enough, I guess, because it does protect. Honestly, I've never had a virus hit my machine. And the reason why is I do a few basic things that we haven't communicated.

Do you feel that the security perceptions and realities that Microsoft faces threaten the business? Yes. . . . I think it threatens business for everyone. It's not a Microsoft statement. I think that customers are afraid that their business is going to be jeopardized by the IT infrastructure, because they're so dependent on computers. That's a huge problem for the entire industry, and it's a huge problem for us. And I take it very, very seriously.

When Microsoft signed the $30 million contract with the Department of Homeland Security, in a lot of people's minds that took things up a notch beyond "the security of my company" to "the security of my country." Did that contract change Microsoft's thinking or approach in any way? For me personally, no. It might have for others here in the company. . . . I think my personal sensitivity to this has been high for some time now

What do you see as the accomplishments vs. the disappointments with regard to Microsoft's Trustworthy Computing initiative in the past year and a half? It's sort of funny to say this, because it's sort of asymptotic to perfection, but the first part of the curve is a huge jump, so I feel incredible progress. We trained everyone. We have people who have written textbooks. We have threat models that happened. We have all the work that we did in terms of the analysis tools, which are really phenomenal. We have some of the best people in the research team that are doing tools that analyze the code looking for issues.

The level of importance on, "If you know of such a problem, will you ever ship the product?" If there's an exploit . . . the answer is, you don't ship — and have that permeate the company so deeply, it's great. Are we perfect? No. But if you look at the slope of what we've accomplished, it's pretty phenomenal. It may not be visible to everybody because oftentimes, once we turn the ship around, it may not be visible, but we have turned the ship.

[Windows Server] 2003 is a big step up. It's not enough, but it's a big, big step up. It's dramatically different than looking back just a few years. I mean, look at NT 4, look at Windows ME — I mean, come on. It's quite a different world today. The ship has been turned, and I see all the progress inside.

We still demand more internally, and in terms of our processes, there's just so much more rigor about it in terms of the reviews that we do from external groups that come in. We have an academic review panel, so some of the best, world-renowned security people come and talk to us about what we're doing right and not doing right. All of those things are big steps ahead.

You asked about disappointments. Well, I am sort of a perfectionist, and we still have work to do. We know that. I just feel really bad personally about this worm. I wasn't impacted. I know how people could have avoided it, but they didn't. So I take — the company takes — responsibility. We've got to do better. ◗

Microsoft Extends Mainstream Support for Exchange 5.5

REDMOND, WASH.

Corporate users who may have been getting anxious about the impending end date for Microsoft Exchange Server 5.5 support will be getting a reprieve.

Microsoft today plans to announce that it will extend mainstream support for Exchange 5.5 through Dec. 31, 2004. The mainstream support period had been scheduled to draw to a close at the end of this year.

"Customers have been asking for some more time to migrate from 5.5 to 2003," said Missy Stern, an Exchange product manager. "We did this to give them the time and flexibility to migrate on their own schedule."

Stern said industry analyst reports show that between 40% and 60% of Exchange users are running Version 5.5, and the majority run it on Windows NT 4.0. Many users have delayed migrations because of the extensive planning associated with the required move to Active Directory, the directory used by both Exchange 2000 and the newly released Exchange 2003.

The mainstream support phase gives customers no-charge incident support, support for warranty claims and hot-fix support, as well as paid incident support and support charged on an hourly basis.

An extended support period, which includes paid and security hot-fix support, typically runs for two years following the end of the five-year mainstream support phase. But in the case of Exchange, the extended support phase is due to end Dec. 31, 2005, as previously scheduled.

In other developments last week, Microsoft said that the core products in its new Office System were released to manufacturing. The launch date for Office 2003 was set for Oct. 21. Pricing will be unchanged from the previous version, Office XP.

Microsoft also disclosed pricing for two brand-new Office System products. InfoPath will sell for $199. OneNote also is $199, although there will be a $100 mail-in rebate available for qualifying customers.

Also last week, Bob Muglia, senior vice president of Microsoft's enterprise storage and management division, disclosed that the long-delayed Systems Management Server 2003 is expected to be released to manufacturing in October, a month later than the company had announced earlier this year.

– *Carol Sliwa*

Continued from page 1

Microsoft

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"The idea is to make sure that consumers aren't just protected from this particular worm, but are better protected on an ongoing basis," said Eric Rudder, senior vice president of servers and tools. He also said the company conducted a telephone conference call Aug. 21 to update corporate customers.

But that prescriptive guidance marks only the initial steps of Microsoft's latest efforts to help customers protect their systems, according to Vice President Jim Allchin. He told *Computerworld* last week that a team is working on new approaches that will involve a combination of existing and new technology to help IT professionals protect their systems by default.

Allchin said he analyzed how Blaster got into systems, and his group has been "really tearing apart the issues about how we can prevent this." As head of Microsoft's platforms group, Allchin has overall responsibility for the product delivery, engineering and technical architecture of the Windows operating system, server products, .Net tools and new-media technology.

"I've had enough, and I'm going to do something about it," he said. But Allchin declined to provide specific details and said simply, "It's technology. It's a way that they can choose to run their systems."

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Help on the Way

Another forthcoming mechanism that's expected to help users protect their PCs is a combined hardware and software initiative known as the Next-Generation Secure Computing Base (NGSCB), formerly called Palladium. Allchin disclosed last week that Microsoft has seen NGSCB work on hardware, rather than merely on simulators. "We think that's pretty amazing," he said.

In the meantime, Microsoft employees at all levels have been focusing their attention on coping with the latest vulnerability. During a meeting last week, a concerned Chairman Bill Gates was trying to find out why it was taking 40 minutes for a customer to get help over the telephone, according to Lori Moore, vice president of product support services.

And the 1,500 Microsoft employees who volunteered for an hour's worth of training so they could take customer calls at the company's satellite campus in Issaquah, Wash., included Rudder and Brian Valentine, senior vice president of the Windows division.

But Rudder, who took time out from his vacation to man the phones, downplayed his involvement and asked that the focus be "the real folks who were the heroes of customer support." He also lauded key antivirus vendors that pitched in, such as Network Associates Inc., Symantec Corp., Computer Associates International Inc. and Trend Micro Inc.

"People have been living on adrenaline, and they're still really jazzed about working these long hours," Moore said late last week, as the call volume finally subsided to 25,000 per day. She said most customers have been sympathetic to Microsoft and have directed their anger at the virus writers who created Blaster.

"It's no excuse for having the problem," Moore said. "But I think there's great intention and great enthusiasm on the development side and in the company overall in really fixing and addressing these issues."

Continued from page 1

Users

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Security experts attributed the worm's seemingly unprecedented speed and reach to its ability to install on each machine it infects a Simple Mail Transfer Protocol server, which it uses to propagate itself via e-mail, and to the fact that it's spread both by e-mail and by network file-sharing.

The attacks disrupted service at some large companies. On Aug. 20, Jacksonville, Fla.-based CSX Corp., which owns the largest rail network in the eastern U.S., had to halt passenger and freight train services — including the morning commuter trains in metropolitan Washington — as a result of Blaster. The worm caused "significant slowdowns" to major applications, including dispatching and signal systems, according to a note on the CSX Web site.

Air Canada's reservation and airport check-in systems were similarly affected by Blaster, causing the Saint-Laurent, Quebec-based airline to delay and even cancel some flights on Aug 19.

Even companies not directly affected by last week's attacks felt their ripple effects.

External e-mail service at the MD Anderson Cancer Center at the University of Texas at Houston was slowed by Sobig.F "because of the massive number of pings and infected e-mail attempting to penetrate our perimeter defenses," said Lew Wagner, the center's chief information security officer. At its peak, the center's e-mail server was being hit by "tens of thousands" of such e-mails, he said.

And Baker Hill, which uses a third party to screen e-mail, had to deal with a stream of spoofed messages using the e-mail addresses of Baker Hill employees that were being bounced back by other servers.

On Aug. 19 alone, Dulles, Va.-based America Online Inc.'s automatic e-mail scanning service for its subscribers detected 23.2 million attachments containing the Sobig.F virus, according to a company spokesman. Though the volume didn't disrupt service, Sobig.F was spreading "faster than any e-mail virus we have ever seen," he said.

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The experiences of the past two weeks have left IT managers fuming.

"It would be a great idea if the software industry had to pay attention to [the] product safety and security liability laws that other products have to adhere to," said Dennis Treece, director of corporate security at the Massachusetts Port Authority in Boston.

"As a rule, I don't like Congress messing around with laws governing cyberspace because it's so hard to write good law for such a dynamic field," he said. "But the issue of product liability is static enough as to beg [for] some sort of government intervention."

As threats become more sophisticated, there's a growing need for more automated tools for testing and dealing with them, Wagner said.

Unprepared For Blaster

Of 2,000 PC users surveyed via e-mail:

42% said they had not downloaded the patch to ward off Blaster prior to the attack.

23% said they do not regularly download software updates

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Emergency Response

Microsoft made changes to its emergency response processes in the aftermath of Nimda, which hit in Sept. 2001. Improvements included:

- Requiring the emergency response process to be tested at least monthly and improved as necessary.
- Establishing a 24-hour Microsoft Watch team to track potential new attacks.
- Defining and documenting on-call procedures.
- Mandating that all response leaders carry emergency contact cards.

Continued from page 1

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Gateway Adds Storage Devices, Servers to Infiltrate Data Centers

Disk array, tape library will augment new line of multiprocessor systems

BY LUCAS MEARIAN

GATEWAY INC. this week plans to announce its first disk array, a low-end product that's part of a new strategy under which the PC vendor is trying to sell servers and storage devices for use in corporate data centers.

In addition to the disk subsystem, which can scale from 100GB to 2TB of capacity, Gateway is offering a tape library that can handle up to 1.6TB of data (see box). The disk and tape products join a four-processor server that the Poway, Calif.-based company introduced earlier this month and a dual-CPU system that it launched last week.

Gateway officials said that application servers and storage devices are now their top business priorities and that the company plans to round out its hardware offerings to corporate IT managers.

"We'll have enterprise-class [storage] products by the end of the year and more price/performance-oriented products at the low end," said Scott Weinbrandt, vice president and general manager of Gateway's systems and networking group.

Rance Petty, network support manager at FlightSafety Texas Inc., a company in Broken Arrow, Okla., that also operates under the name FlightSafety International Inc., said he's considering a purchase of the Gateway array for storing low-priority e-mail and other data that isn't considered critical. That would let Petty free up disk space on a more expensive file server from Network Appliance Inc.

Petty said that because Gateway has provided him with good service on the 350 low-end servers and 550 PCs that FlightSafety uses to run its pilot training simulators, he trusts the company to provide the same level of support for its data center devices.

"We wouldn't buy a high-end product [from Gateway] right off the bat," he added. "We certainly wouldn't put it up against our NetApp [box], but as far as secondary storage, we'd give them a shot."

Despite Gateway's lack of experience at the data center level, it isn't at a disadvantage relative to PC rivals like Dell Inc. and Hewlett-Packard Co. in selling low-end storage devices, said Arun Taneja, an analyst at Taneja Group Inc. in Hopkinton, Mass. "At the commodity level, there are plenty of storage products that don't require any sophisticated sales teams," Taneja said. But, he added, if Gateway tries to sell more complex products, such as high-end disk arrays that offer data mirroring, snapshot and replication capabilities, "then I'd have to question it."

Weinbrandt said Gateway isn't just looking to make up for flat PC sales by adding servers and storage devices. The company wants to expand its reach into corporate IT infrastructures, he said, adding that its plans do include a move into the high-end storage market.

"The one thing we have going for us is we don't have a legacy [in storage]," Weinbrandt said. "We can deliver the latest technology at the lowest price point."

According to Weinbrandt, the Gateway 850 SCSI JBOD disk array is currently a file server designed for direct- or network-attached storage. But he said the array will soon be upgraded to include support for iSCSI ports, which will let it back up block-level data on servers over IP networks.

Gateway's Data Center Offerings

SERVERS

960: A fully redundant server with up to four Intel Xeon MP processors, for use in running databases and e-mail systems. Starts at $6,900

960X: A lower-end system that supports two Xeon CPUs and is aimed at workgroups and small or midsize companies. Starts at $1,300

STORAGE DEVICES

850 SCSI JBOD: A disk subsystem that supports RAID controllers and up to 12 hot-swappable Ultra320 SCSI drives. Starts at $2,900

820 LTO Autoloader: A rebranded Certance LLC tape library, with one tape drive and up to 12 cartridges. Starts at $5,900

Correction

The Newsmaker Q&A feature in the Aug. 18 Management section incorrectly said that the New York Board of Trade is moving to a new trading floor next month in Queens. The Board of Trade is actually moving from its backup operations in Queens to the New York Mercantile Exchange Inc.'s building, which is part of the World Financial Center in lower Manhattan.

Real-time Data Warehousing Tests IT's Ability to Serve Businesses, Users Say

Panelists: Not all apps need instant data integration

BY MARC L. SONOINI
BOSTON

Although there's big buzz among IT managers about creating real-time systems that can consolidate important business information into data warehouses for rapid analysis and reporting, a panel of users last week warned that considerable obstacles remain.

For example, companies need to develop a business case for real-time integration before investing in projects, said Bob Leo, director of database administration at Landstar System Inc. The Jacksonville, Fla.-based transportation services company applies a real-time approach only in applications where it's really needed, Leo said, adding that the company's goal is to provide whatever type of data updates are required by end users — whether it's monthly, nightly, hourly or real-time.

"A lot of what we're doing is revolving around our ability to move information from our disparate systems and get that into people's hands and make the information really usable in their everyday jobs," Leo said. "We do things in IT not because we can, but because the business needs us to."

Landstar uses data integration tools developed by Ascential Software Corp. to share information across a Web-based network used by independent truckers, shipping agents and customers. Westboro, Mass.-based Ascential sponsored last week's panel discussion, which was held as part of The Data Warehousing Institute's TDWI World Conference here.

Stephen Zander, director of operations and technology for enterprise solutions and services at McKesson Corp. in San Francisco, said the health care company typically makes transaction data available to end users for analysis within 24 hours.

One big issue with real-time data warehouse feeds is that the company loses its "grace period" for cleaning up data to ensure that the information is accurate, he said.

Much of the work that goes into managing a data warehouse involves fixing bad data that might have originated "10 systems away," according to Zander. To minimize such problems, he said, McKesson's IT staff works with the company's finance and billing departments to ensure that the data fields in their applications are properly filled in from the start.

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Zander also noted that exactly what constitutes real-time data integration is often defined differently from company to company, depending on their business needs. McKesson uses several Ascential tools, along with SAP AG's Business Information Warehouse software, as part of its data warehousing operations.

Some of Pfizer Inc.'s end users request real-time connections to data, said Danny Siegel, IT director for data management and architecture at the New York-based pharmaceuticals maker. But developing such links generally makes sense for only a few employees who need hourly financial updates, he added.

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Ironic how it takes the cutting edge technology of 2003 to access the cutting edge technology of 1973.

myEXTRA!™ Smart Connectors let you leverage your existing legacy data and logic.

"Cutting edge" doesn't cut it. You need products that do what they say they will do. This is what we say: Our myEXTRA! Smart Connectors give you XML-based Web services — they let you get at legacy information without changing host applications. You can put all of the business data and applications locked up in mainframes to new use in hours or days, not weeks or months. We've spent the last 18 years making legacy data more useful. Smart Connectors are the logical next step, making data easier to get at.

Find out more. Download our free White Paper "Leveraging Legacy Applications to Serve New Business Initiatives" at www.attachmate.com/SC7.

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BRIEFS

EDS Wins Federal Agency Deal . . .

The U.S. Department of Housing and Urban Development (HUD) has awarded Electronic Data Systems Corp. an IT outsourcing and support services contract that could be worth up to $860 million over 11 years. Plano, Texas-based EDS will manage HUD's systems and networks while also taking over responsibility for IT security, help desk operations and other functions.

. . . And Launches a Desktop Service

In other news, EDS launched a utility-based desktop PC management service that makes use of new "zero-touch" software deployment technology developed by Microsoft Corp. Microsoft released the deployment accelerator along with a set of rollout scripts and guidelines that it said are aimed at speeding up installations of Windows XP, Office XP and Office 2003.

Boeing Spins Off Messaging Tools

The Boeing Co. said it has spun off a company to market its e-mail gateway technology. The new company, MessageGate Inc. in Bellevue, Wash., is shipping message-filtering software and plans to deliver a full line of e-mail security tools. It was launched with $5.1 million in funding from Chicago-based Boeing and two venture capital firms.

Symantec Acquires IT Security Patent

Symantec Corp. in Cupertino, Calif., said it will pay $62.5 million to buy a security technology patent from Hilgraeve Inc. in Monroe, Mich., and to license other patents that are owned by Hilgraeve. Symantec lowered its profit for its first quarter, which ended July 4, by $9.5 million as a result of the deal.

Continued from page 1

MGM

to really move the data center, and do it in such a way that no one felt any downtime."

As told by Campbell and her staff, the behind-the-scenes story of the data center relocation project begins in true Hollywood fashion — with a lot of make-believe.

Two and a half years ago, Campbell learned that MGM's data center would be moved from Santa Monica to a building that had yet to be constructed. "This was a new building, so nothing had been tested," said Campbell. "There's no fiber coming into the building. There is no established infrastructure — there's no electric, there's nothing. There's no building."

But there was a deadline: May of this year. And the most pressing issue was the need to complete the relocation without any IT downtime .

The Hard Part

The first thing that Campbell did was to hire expert help, since she had never moved a data center before. MGM narrowed a field of prospective consultants down to two finalists before settling on IBM, mainly because of the rapport that the company's IT staff had developed with IBM's project manager.

Once the consulting issue was settled, a key to the zero-downtime effort was designing the network infrastructure for the new facility. "Think of it as the blood supply," Campbell said. "You can't do that over a weekend."

Working with Ray Larson, MGM's executive director of telecommunications, MGM's IT team recommended an all-new network infrastructure to management. This fiber network supports gigabyte bandwidth speeds, which means, for instance, that company executives will be able to view film dailies — daily shootings from movie sets — via the network instead of waiting for hand-delivered tapes.

Another major upgrade in-

"That's the nature of a good data center: It runs, and you shouldn't notice."

CAROL CAMPBELL,
SENIOR VICE PRESIDENT, MGM

volved the power supply. A power outage could have knocked out the Santa Monica data center. Campbell argued for a generator, an investment of more than $1 million.

"I don't think it was a difficult sell, but definitely you always have to show a corporation the value of an investment," she said. "And this was a large investment." The data center also needed room to grow. Campbell wanted to triple the size of the 2,000-square-foot data center that MGM had in Santa Monica.

The data center processes millions of dollars worth of transactions for all of MGM's offices worldwide, including ones in New York, London and Paris, and the company has been on an upswing, with revenue up 35% year-over-year to $882.9 million for the six-month period that ended June 30.

In addition, a key strategy for MGM is taking back part of business lines it had previously outsourced, such as worldwide video distribution. For instance, MGM is now handling distribution in North America. That change eliminated vendor fees paid by the company, but it also meant expanding an SAP ERP system from 25GB to 1.8TB.

At the new headquarters, Campbell got a 5,000-square-foot data center, two and half times larger than the Santa Monica facility. It's a gleaming space, primarily stacked with Hewlett-Packard Co. servers running the HP-UX version of Unix, and it had room for expansion.

The move to the new site involved countless details, negotiations and trade-offs. For instance, MGM's IT staff wanted to cover the windows in the data center to block sunlight and help control the temperatures, but building management rejected that proposal for aesthetic reasons. Instead, dark shades are used, and servers have been set back from the windows.

A lot of attention was paid to the actual construction. Among the hard-hat-wearing IT workers was Marietta Albin, assistant manager of computer operations. One of her jobs was ensuring that the future data center power requirements were being followed by contractors. She found discrepancies. "The most important thing is preparation," said Albin.

Larson wanted every connection, switch and power supply tested before the move, in order to avoid surprises. "We just felt it was important to be out there [on-site] every day," he said.

Before the move date, MGM leased an OC12 (655Mbit/sec.) line to connect Santa Monica with the new data center and replicated the data on disk arrays borrowed from EMC Corp. "By treating it as a potential disaster, that's how you mitigate risk," said Campbell.

The big move finally took place over Easter weekend in mid-April. Six trucks were lined up at the Santa Monica offices. Two were loaded before Santa Monica police showed up to say that the idling trucks were violating the city's nighttime noise-abatement ordinance. That prompted some reshuffling of schedules but caused no real delay.

MGM

IT staffers worked 12-hour shifts, and many workers from other departments at the company volunteered to help run cable. "We were probably overstaffed, overfed — everything, just in terms of being ready," said Campbell. "People took great pride in it; maybe it was a little fear. We just didn't want any problems, because it would hurt the company."

But all of the efforts paid off, according to Campbell. MGM's employees never missed a beat. Everything was running perfectly when they returned to work.

It doesn't bother Campbell or her IT staff that they won't be sharing any Oscar stage. Not at all. "People shouldn't notice what I do," she said. "That's the nature of a good data center: It runs, and you shouldn't notice. And we're fine with that."

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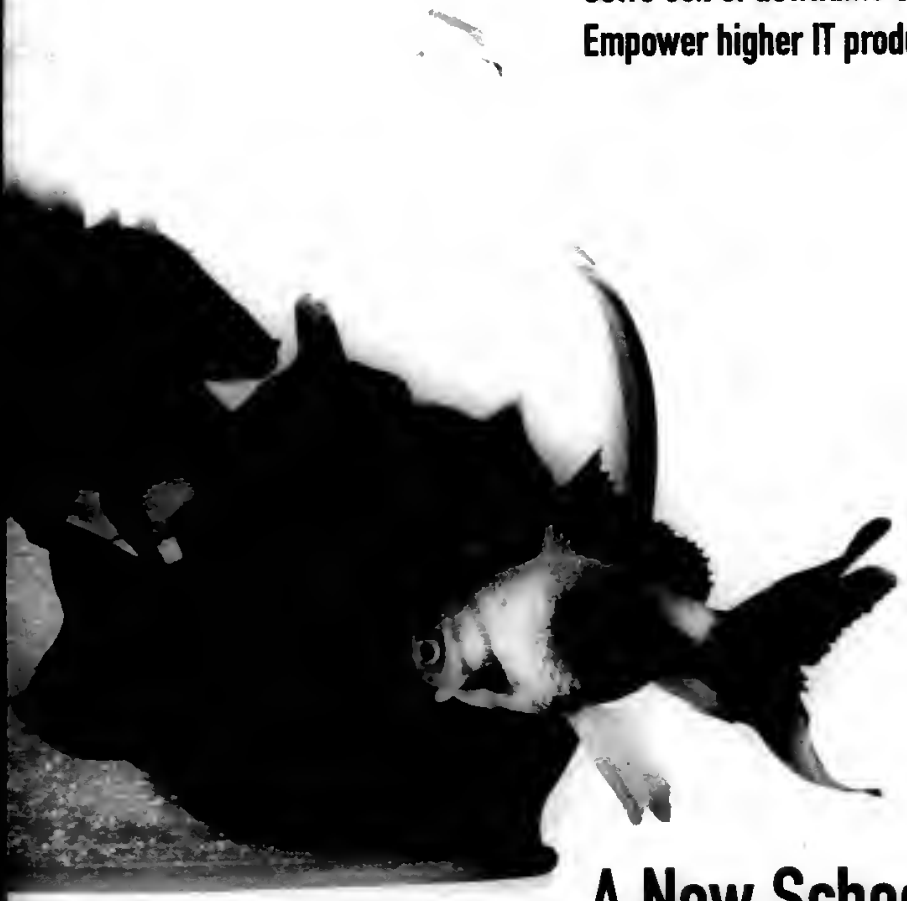

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MARYFRAN JOHNSON

Spam Fighters Respond

MY HEART skittered with alarm last week when I saw our headline "Electronic Retailers Hurt by Spam Flood" [QuickLink 40655], and the avid online shopper in me snapped to attention. The latest nefarious side effect of the junk e-mail flood is that many legitimate marketing messages — updates that people actually want — are being filtered out and forever lost.

It's one thing to misplace work-related messages or accidentally block beloved family members, but to be denied a great online bargain? Add another circle to the hell that is spam.

All kidding aside, the onetime business benefits of e-mail are in possibly irreversible decline because of the polluting effects of spam, said several retailers at this month's eTail 2003 conference in Boston. For example, eBags.com sends 8 million e-mails a month to customers who opt into its mailing list. Last year, some 22% of those customers made purchases. That rate has dropped to 13%, and company officials believe spam is largely to blame.

As business losses mount under the barrage of unwanted e-mail, support for legislative action also grows. Even the most anti-government-regulation types are rooting for an Uncle Sam solution to spam. So it was disheartening last week to hear Timothy Muris, the Federal Trade Commission's chief, basically admit defeat before any antispam legislation has even passed Congress. Muris told the Dow Jones Newswires that additional laws will prove useless in stopping the slippery, anonymous spammers who already ignore existing laws with impunity.

So what about a national do-not-spam list? "I'd advise customers not to waste their time and effort," said the FTC's top official. Criminy. What does he think will help? Improvements in technology, he suggested, specifically in software that can intelligently block spam before it reaches in-boxes.

Earlier this month, I wrote about an open-source spam-blocking tool called SpamBayes [QuickLink 40306] that users can "train" to distinguish between unwanted and wanted messages (like those from your favorite online stores). I've since heard from several people who tried it and were very impressed (for one, see Readers' Letters, page 21). Other readers also volunteered some accounts of their own spam-fighting successes.

One IT manager reported on DigiPortal Software Inc.'s ChoiceMail One. It creates a "white list" for approved senders and filters all incoming e-mail through a separate Web site. "This is highly effective against spam, since most spammers send from fake addresses," he explained. "So the reply never gets to them, and they never register on the Web site."

A Lotus Notes/Domino user wrote in about his company's beta-testing of SpamSentinel, from Mayflower Software Inc. "We only use the server product, and it is nothing short of amazing with regards to how well it traps spam," he said. "It does produce some false positives, but it is very easy to release them, and as important, build a 'white list' for those so it won't stop them again."

Another suggestion was to use a "border filter," which effectively outsources the spam problem. One reader's company [QuickLink 40757] is using spam-blocking and virus-scanning services from Erado.com. "Over 50,000 e-mails per month are directed our way, but Erado is wiping out over 70% of them," the IT director wrote, "providing protection, lower traffic on our network and reduced staff time monitoring the spam epidemic."

Now, I would put that extra time to good use with some e-shopping, but that's just me.

PIMM FOX

New Tools For Coders

THE OPEN-SOURCE software tradition hails from inside the walls of IT. Corporate developers have long understood the programming advantages they get from being able to read, distribute and modify source code through the development process and beyond. But the tools for managing the code need to change to match our distributed work world.

Tools developed for LANs are just not as suited for geographically dispersed development environments as newer collaborative development software, nor do they have the new tools' file-sharing, revision-control and Web-based issue-tracking features.

With IT projects increasingly employing developers outside the enterprise, it's also necessary to figure out how to share source code with customers and business partners who have built-in authorization and permission levels. In addition, developers are likely to work on multiple projects and need a management system (as well as the development tools) to organize their myriad efforts.

One approach is to create a central repository that's managed as a service and accessible to all. This means, for example, that developers in Asia, the U.S. and Europe could see and manage the most current versions of multiple projects, with updates available whenever needed. Older, heavy client-side tools would make it difficult to maintain version control and would put a strain on network resources as each developer downloads the latest changes and requirements.

CollabNet Inc., a collaboration tool vendor and managed service provider in Brisbane, Calif., has put together a service that Sony, for one, is using across its various business units to maintain software quality. The advantages that this repository and managed service method offers include low bandwidth requirements and direct interaction with the development server. Another approach, from IBM's Ratio-

nal Software division, involves the use of a server that hosts the master source code. Both techniques do away with the islands of data that can hamper and confuse software development.

Newer collaboration tools also have features that allow users to reuse existing code, maximizing existing license agreements. Global repositories make it feasible (and cost-effective) to review object component libraries and understand the specific context of development in order to get the most out of code. In this case, you're looking to get at the original source code rather than the layers of enhancements that have nothing to do with your specific project. Capture tools that incorporate verbal information, notes and business-owner data are also vital to good collaboration tools.

Coding with business partners is much different from writing code in a silo; new collaboration tools are designed to help.

DAN GILLMOR

IT Lessons From Dean's Campaign

HOWARD DEAN'S presidential campaign is setting a new standard for the political use of technology as a communications tool. Corporations can learn from Dean's approach — and IT can help make the case for following the campaign's lead.

Dean's Internet strategy is all about decentralization. Although a command-and-control staff organization still exists at headquarters, Dean's forces are dramatically dispersed. They're raising vast amounts of money, creating pro-Dean weblogs, planning organizing meetings, chatting with one another in mail lists and discussion groups, and more.

In practice, it all adds up to something simple yet revolutionary in a national political campaign: Dean's handlers and the candidate himself are trusting the people out at the edges to be essential parts of the campaign. The official campaign is smart enough not to attempt to control what the supporters are doing. Headquarters is supplying moral support and some tools — such as help in setting up fund-raising sites — but it's emphatically staying away from anything that might be perceived as pulling the strings.

What might this mean to corporate America? Plenty, though I doubt that most companies — like most campaigns — would be very comfortable with the implications.

Consider the following scenario: Your company sells a consumer product with a fairly wide customer base. Whether you like it or not, people are talking about what you sell, typically in online forums as well as the physical world, and they're helping one another figure out how best to use it.

Microsoft understood a long time ago that customers can help one another — and take a certain amount of pleasure in doing so — sometimes more efficiently than the paid support staff. It's no coincidence that Microsoft does what it can to make its Usenet product-support newsgroups comfortable places to visit and learn.

Dean's campaign has an official weblog, a complement to the scores of supportive blogs that have sprung up without any official prodding. The official blog only occasionally features Dean's own statements — and they're hardly scintillating — but it ably reflects the talent and commitment of his aides.

How many companies have even considered a blog? Too few. Blogs are relatively informal, but their key feature is voice. They speak in a human way to various constituencies, if you will — to voters in the political world, and to customers, staffers and suppliers in the corporate world.

But understanding and gaining value from the people out at the edges is the key. People who care enough about what you're doing to talk about it online, and maybe do more than that, will annoy you on occasion, but they'll also often be your best allies.

IT people can use these techniques to improve their own shops, of course. But they should take the idea of decentralized information to nontechnical managers, too. Show the suits what they can get out of listening to the folks outside the normal conversational stream. Then show them that IT has tools to bring the conversation to the insiders, who can capture — in the best sense of the word — the value in those communications.

Don't try to clamp down on the edges of the network. What Dean gets and his opponents don't is that the conversation is about everyone's future, not just the guy in the middle.

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READERS' LETTERS

Spam Filter Works

I AM COMPELLED to write concerning Maryfran Johnson's Aug. 4 column, "Skirmishing With Spam" [QuickLink 40306]. After researching the mechanics of the SpamBayes solution, I decided to install the Outlook plug-in. Wow! What an incredibly elegant solution. I performed an initial "training" of the database with 69 spam messages and 75 nonspam messages. By the end of the day, the SpamBayes program correctly intercepted 68 new spam messages. Though it didn't detect six other messages as spam, it was a simple matter to identify them as such, thus continuing to train the database. More important, none of my legitimate e-mails were misidentified as spam. Of course, only time will tell if this approach to fighting spam will remain effective. For now, it certainly has cleaned up my in-box.

Douglas Rosenbrock
Senior programmer/analyst, Hauppauge, N.Y.

An ERP Nightmare

FOR A COUPLE OF YEARS, I was employed by an outsourcer to run customer relations for a large single-instance SAP system ["Time to Outsource ERP?" QuickLink 40020]. It was a nightmare. The tensions between the needs for stability in the data center and for changes in the application meant we were always fighting with the customer or the customer's development groups. The database was about 1TB with three replicas for fail-over purposes. The equipment was large, unwieldy and fragile. Promises made by the software vendor and the development groups (a large consulting firm) were simply not achievable. The developers were happy to tell the outsourcer what the outsourcer was doing wrong, but the outsourcer wasn't invited to deal with the practicalities and implications of development/design decisions. After two years of almost nightly outages, I am older, wiser and have a great appreciation for what operations groups have to go through. I am glad to be back in architecture and design, though.

Chris Bird
President, The Network Effect, Irving, Texas, seabird@msn.com

Costs of Offshore

IAN SIMPSON would have never worded his letter as he did had he experienced the ax at a company seeking to outsource in the wake of 9/11 [QuickLink 39864]. He shows a lack of sensitivity and knowledge by accusing the unemployed of costing 300% more, being less productive and doing lower-quality work than overseas workers. What is he measuring when he attributes higher productivity to overseas workers? Do experience and knowledge of the U.S. business environment count in his analysis, or does he just look at number of hours worked or lines of code produced? One must be careful not to overlook the externalities of farming work out of the country. When the U.S. eventually finds itself short of IT talent due to declining numbers of people going to college for IT degrees, we will be at the mercy of rising costs from foreign companies. However, it will take us years to develop the people with the required skills.

Ilene Schuss
Project manager, Long Island, N.Y., ijs2526@aol.com

How to Tally the Value of Security

ROI HAS ALWAYS been an inappropriate measure for the effectiveness of security spending ["IT Security Short on Funding," QuickLink 39992]. I like to frame this statement with the following example: You buy cyber insurance for $100,000 per year. If you run an effective IT security organization, you make no claim against that insurance. So, your effective ROI is zero. Was this a wasted investment? No, it's an accepted, standard cost of doing business.

Security spending follows this model – you can't realize ROI on something based on annualized loss expectancy. The effective measure of a security organization and the associated spending can come only through measurements of risk. And a solid risk management program that uses periodic comparisons to risk assessment baselines is the most accurate, repeatable and defensible method to show the value of an IT security organization.

Fred Langston, CISSP
Senior principal consultant, Guardent, Seattle, Fred.Langston@Guardent.com

COMPUTERWORLD welcomes comments from its readers. Letters will be edited for brevity and clarity. They should be addressed to Jamie Eckle, letters editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax. (508) 879-4843. E-mail: letters@computerworld.com. Include an address and phone number for immediate verification.

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9:00am to 9:45am	**The User Experience: An In-Depth Case Study**
9:45am to 10:15am	**Thriving in Times of Transition: One CIO's Perspective**
10:15am to 10:45am	Refreshment and Networking Break
10:45am to 11:45am	**High-Impact Strategies for Delivering Business Intelligence Results** Panel Discussion moderated by Julia King, National Correspondent, Computerworld
11:45am to 12:15pm	**Evolving the Enterprise: Leveraging Information for Competitive Gain** Jim Davis, SVP, SAS Institute
12:15pm to 1:00pm	Networking Luncheon
1:00pm to 1:30pm	**Building Innovation into a Business Intelligence Infrastructure** Shaku Atre, author of Business Intelligence Roadmap and President, Atre Group
1:30pm to 2:00pm	**Turning a Legal Eye on IT Governance** James Hackett, Jr., Partner, Choate, Hall & Stewart
2:00pm to 3:00pm	**Regulated IT: Uncle Sam Wants Your Data** Panel Discussion moderated by Tom Hoffman, Computerworld Reporter
3:00pm	Program concludes

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9:00am to 9:45am	**The User Experience: An In-Depth Case Study**
9:45am to 10:15am	**Thriving in Times of Transition: One CIO's Perspective** Doug Busch, CIO, Intel
10:15am to 10:45am	Refreshment and Networking Break
10:45am to 11:45am	**High-Impact Strategies for Delivering Business Intelligence Results** Panel Discussion moderated by Julia King, National Correspondent, Computerworld
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1:30pm to 2:30pm	**Regulated IT: Uncle Sam Wants Your Data** Panel Discussion moderated by Tom Hoffman, Computerworld Reporter
2:30pm to 3:00pm	Thornton May, IT Futurist and Computerworld Columnist
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ERIC BERLOW

Extract, transform and load software is the foundation of successful data warehouses. IT managers need to ask the right questions to make ETL work well. By Alan R. Earls

ETL: Preparation IS THE Best Bet

WHEN YOU'VE GOT half a dozen riverboat gambling operations, it's important that everyone plays by the same rules. Argosy Gaming Co., with headquarters in Alton, Ill., and a fleet of six riverboat casinos, had decided that bringing all customer data together would enhance management's view of operations and potentially help strengthen customer relationships. To accomplish those goals, though, the company needed to access disparate databases and put in place an extract, transform and load (ETL) system to help populate and maintain a central data warehouse.

Jason Fortenberry, a data-warehousing analyst, came aboard at Argosy just as the company's data warehouse project started in 2001. His job was made easier, he says, by the adoption of Toronto-based Hummingbird Ltd.'s Genio ETL tool, which helped bridge systems and automate processes. But like others going through ETL projects, he learned the hard way that preparing for ETL is just as important as having the right tools.

The riverboats each had unique and incompatible ways of defining a host of operational activities and customer characteristics — in essence, they were each playing the same game but with different rules. But those problems remained hidden until reports from the company's Teradata data warehouse began to turn up inconsistent or troubling data. That's when Fortenberry and his staff discovered conflicting definitions for a wide range of data types — problems he wishes he had identified much earlier.

Fortenberry's troubles — and his successes — are typical of ETL, the complex and often expensive prelude to data warehouse success. ETL is often problematic because of its inherent complexity and underlying business challenges, such as making sure you plan adequately and have quality data to process.

Analysts, users and even vendors say all bets are off if you don't have a clear understanding of your data and what you want to achieve with it. Then there are choices, like whether to go for a centralized architecture — the simplest and most common configuration — or a distributed system, with ETL processing spread across sort tools, system utilities and target databases, which is sometimes a necessity in larger, more complicated data warehouses. Even if you navigate those waters successfully, you still need to ensure that the ETL foundation you build for your data warehouse can scale to meet growing data streams and future information demands.

As the term implies, ETL involves extracting data

Continued on page 28

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Continued from page 25

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But, as Philip Russom, a Giga Information Group Inc. analyst explains, a data warehouse often contains data values and data structures that never existed in a source system. Since many analytic questions a business user would ask of a data warehouse can be answered only with calculated values (like averages, rankings or metrics), the ETL tool must calculate these from various data sources and load them into the warehouse.

Similarly, notes Russom, a data warehouse typically contains "time-series data." The average operational application keeps track of the current state of a value such as a bank account balance. It's the job of the ETL tool to regularly append new states of a value to the series.

ETL is generally not cheap. Russom estimates that for smaller projects, ETL tools range from "free" (such as the Data Transformation Services feature in Microsoft Corp.'s SQL Server) to about $35,000 for DT/Studio from Embarcadero Technologies Inc. in San Francisco. But for tools that can handle enterprise-scope numbers, diverse sources and targets, plus complex transformations, Russom says to expect entry-level pricing of $75,000 to $100,000. "By the time you've added necessities like connectors to specialized sources and targets or extra developer seats, the average is more like $200,000 per year," he says.

The initial costs of ETL tools will almost always be higher than the initial costs of hand-coding, which was the normal approach to ETL through the mid-1990s. "With a hand-coded solution, entry costs are very low," Russom says. However, over time, the economics of the two approaches invert; hence, it's best to look at total ETL costs over a five-year period.

The Hard Part

"We see ETL as perhaps the most critical component in the data warehouse because it includes data integration and cleansing and acquisition — the hard parts of the project," says Jim Keene, enterprise data warehouse senior project manager at Milwaukee-based Harley-Davidson Inc. "Once it is in the warehouse and the schema is set, it is pretty easy to build views or apply an OLAP [online analytical processing] template," he adds.

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In the summer of 2001, costs were so high that Feierstein was assigned the job of re-engineering the ETL process to make it more scalable and cost-effective. On the advice of Chicago-based consulting firm Knightsbridge Solutions LLC, he selected the Co-Operating System from Ab Initio Software Corp. in Lexington, Mass.

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The ETL deployment went smoothly and stayed close to schedule, with a few "bumps and bruises," says Feierstein. "The key to any new ETL development is the learning curve," he explains. Critical issues include having a strong quality assurance environment and building in scalability.

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For example, he explains, riverboats calculated visits differently. One property would credit a customer with a visit only if he actually played at a slot machine or table. Another had an expanded definition and credited customers with visits when they redeemed coupons, even if they didn't play. So identical customer activity might have one riverboat reporting four player visits and another reporting 10. "This type of discovery was repeated for everything from defining what a 'player' is to calculating a player's profitability," says Fortenberry.

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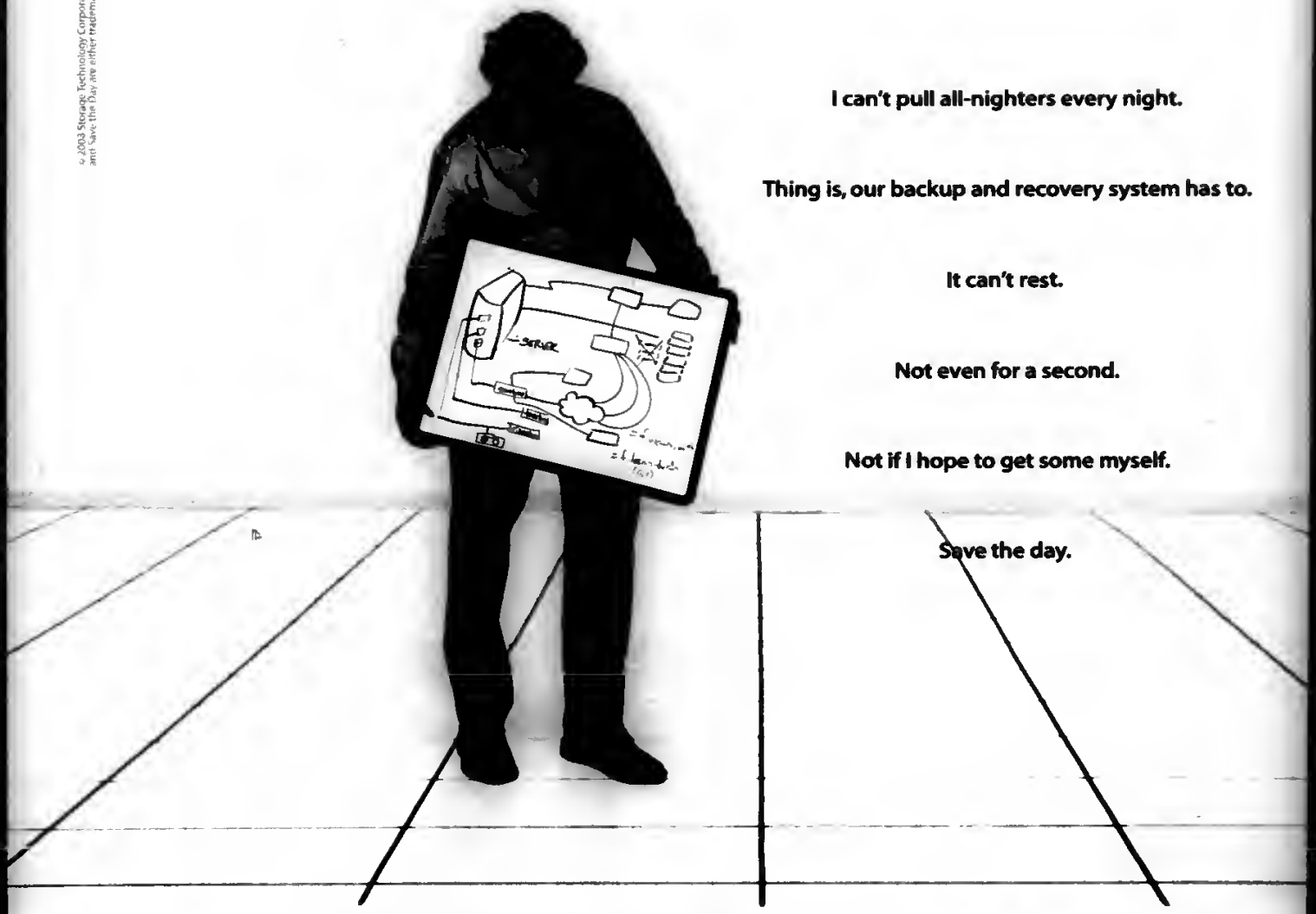

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Handhelds Try to Do It All

Combine a camera, a phone, a PDA and e-mail, and the results may bewilder you. Fortunately, the best machines are still the simplest. By Russell Kay

HANDS ON REVIEWS

CHOOSING A handheld device used to be so simple. If you wanted to make and receive phone calls, you got a cell phone. You tracked your calendar and contacts with a PDA. To snap pictures, you used a camera, whether digital or with film. For taking notes, a tape or digital voice recorder would do. For listening to music, an MP3 player did the trick. To

Zire 71, $299

Palm Inc., Milpitas, Calif.
www.palm.com

This device masquerades as a garden variety slim PDA with a brilliant color screen that has four times as many pixels as previous Palm color screens. The sharp and bright 320-by-320-pixel display is better than that on most Pocket PCs, which used to outshine all the others. But push up on the bottom front edge of the Zire and it slides up about an inch, revealing a camera lens pointing away from you and a picture-taking button on the front. What the lens sees is visible on the screen, so you just press and shoot to capture a 640-by-480 VGA photo. The picture quality is only so-so, but I found that was outweighed by the convenience of always having a camera with me, ready to go. I used the Zire as a convenient way of taking visual notes while shopping, for example. And it came in handy several times when I wanted to take a picture but didn't have a "real" camera with me. And while that low resolution doesn't make for the best pictures, they require only a small amount of memory, so you can take plenty of them. With a 64MB secure digital (SD) memory card in the slot, I never came close to running out of storage space. And did I mention it plays movies? Admittedly, watching a movie on a PDA, using the Kinoma Player and Producer, gives new meaning to the term *small screen*, but it can be a surprisingly nice experience. As a professional reviewer, I get to handle a lot of different products, and one result is that I buy very few for my own use. The Zire 71 is the first Palm I've ever seriously considered purchasing.

- **Overall grade: A**
- **Value for the money: A**
- **Important specs:** 16MB memory; 0.7 in. thick; 5.4 oz.; stereo headset jack; SD expansion slot

Pros: Camera is supereasy to use; great color display

Cons: No networking; small built-in memory

Tungsten C, $499

Palm

Palm tries to give every model in its business-class Tungsten line a different personality. The original T and new T2 models are small and aimed at the traditional Palm business user who prefers stylus input. The $419 W incorporates a cell phone (though awkwardly, requiring an external headset) and SMS text messaging for the on-the-go user. The C has an integrated keyboard and is the most expensive and powerful of the line, with 64MB of RAM, Wi-Fi wireless networking and a 400-MHz Intel XScale PXA255 processor. In comparison, the T2 uses a 144-MHz CPU from Texas Instruments Inc. Thus the C is aimed at the business user who wants a lot of features but doesn't want to shift to a Pocket PC.

Palm's Tungsten C

- **Overall grade: A**
- **Value for the money: B**
- **Important specs:** 64MB memory; 0.7 in. thick; 6.3 oz.; mono headset jack; SD expansion slot, voice memo recorder; 802.11b wireless networking; thumb keyboard

get your messages on the go, there were smart pagers and units like Research In Motion Ltd.'s BlackBerry [QuickLink a3560], which did a credible job with e-mail. If you spent a lot of time waiting in airports, you might have splurged and gotten a portable DVD player so you could watch movies.

What all these devices have in common is simplicity: one function per device.

But no one wants to carry around a half-dozen gadgets (and, worse, keep track of a half-dozen power supply units). Even with mainstream clothing designers now including extra pockets for our gizmos, it's just too much.

Over the past few years, handheld devices have taken on more and more functions. The first-generation multifunction devices tried to be jacks of all trades to the wired warrior, but they were decidedly masters of none. When a PDA maker tried to add telephone functions, the result was a bulky and awkward phone. When a cell phone maker tried to add PDA capabilities, we learned that there's a limit to what you can (or want to) do with a tiny screen. Camera add-ins worked surprisingly well, but the image quality and integration left something to be desired.

Device	Operating system	Keyboard	[illegible]	[illegible]	[illegible]	[illegible]	Camera	Voice memo recorder	Music player	Video player	Price
	Palm OS 3.5	✔	✔				Sprint PCS Vision				$299
	Palm OS 5.2.1	✔		✔	✔		Wi-Fi		✔	✔	✔	$499
	Palm OS 5.2.1			✔			External Bluetooth		✔		✔	$399
	Palm OS 5.2.1						None	✔		✔	✔	$299
	Pocket PC 2002	✔	✔		✔	✔	Wi-Fi	✔	✔	✔	✔	$649

Are we past that stage yet? To see how well today's handheld devices perform in their multiple roles and compare their personalities, I took a look at several current models (see chart, above). All of these devices started out as PDAs and thus tend to be physically larger than handhelds that began life as cell phones.

Many people I know would be lost or even out of business if they couldn't easily and regularly check e-mail while they're out of the office. For them, being connected is so important that, even with the growing amount of spam that clogs everybody's in-boxes, they will put up with a lot of inconvenience and expense to stay connected. My personal situation is different. I neither need nor want that degree of being "wirelessed in," and as a result I may be unduly critical (or possibly not critical enough) in assessing the usefulness of these devices' e-mail functions.

These machines are so different from one another that there's no simple way to say which might best suit any one person's needs. Interestingly, the two standout performers were also the cheapest machines tested: the Zire 71 and Treo 300. Both handle their disparate functions simply and easily. You can't go wrong with either one. ◗

Kay is a Computerworld contributing writer in Worcester, Mass. You can reach him at russkay@charter.net.

⊕ **Pros:** Lots of memory; Wi-Fi connectivity; great color display
⊖ **Cons:** Relatively expensive

Tungsten T2, $399

Palm

This is an update of the original Tungsten T [QuickLink 34680] that includes Palm's newest high-resolution color display and an extra 16MB of onboard memory, for a total of 32MB. The collapsible case design, which hides and covers the Graffiti 2 input area when not needed, makes this unit 0.75 in. shorter than its keyboard-equipped brother C, and 0.5 in. shorter than the Zire 71. Its built-in Bluetooth capability allows for an e-mail or Internet connection via a Bluetooth-equipped cell phone, but I didn't test that capability. If you don't need the fuller wireless connectivity or thumb keyboard of the Tungsten C, this is a terrific little machine.

Palm's Tungsten T2

- **Overall grade: A**
- **Value for the money: B**
- **Important specs:** 32MB memory; 0.6 in. thick; 5.6 oz.; voice memo recorder; stereo headset jack; Bluetooth, SD expansion slot; telescoping case design

⊕ **Pros:** Small size; Bluetooth, great color display
⊖ **Cons:** Still low on memory compared with competitors

Hitachi G1000, $649

Sprint Spectrum LP, Overland Park, Kan.
www.sprint.com

The G1000 is a real gee-whiz machine that is, unfortunately, akin to the proverbial camel (i.e., a horse designed by committee). This is a Pocket PC with both a VGA camera and cell phone capabilities, wireless Internet access and a thumb-typing keyboard. Unfortunately, every one of those functions bulks up the unit, making it the largest, heaviest, most awkward to use and most expensive of this group. It will fit in few shirt pockets, and in any case, I didn't find that a comfortable way to carry it. All its functions worked, but none were especially handy. It seemed as if this unit, more than any other and more so than previous Pocket PCs, has a really complex navigation structure, and I found that doing almost anything required an awful lot of pointing and clicking steps. Because of its size and weight, I found it impossible to use the keyboard one-handed. The camera swivels vertically through 270 degrees so that it can face toward or away from you, which is a nice convenience, but its "shutter release button" is an icon rather than a physical button, and the resulting mode of operation seems quite unnatural. If you really want a single device to replace separate units, this appears to be the most consolidated device on the market, but I can't really recommend it.

[illegible]rum's [illegible]chi G1000

- **Overall grade: C+**
- **Value for the money: C**
- **Important specs:** 32MB memory; 0.9 in. thick; 8.4 oz.; camera; cell phone with voice dialing; voice memo recorder; stereo headset jack; SD expansion slot, telescoping case design

⊕ **Pros:** Camera, phone, PDA - it does it all
⊖ **Cons:** Expensive; big and heavy; awkward to hold and use

Treo 300, $299

Handspring Inc., Mountain View, Calif.
www.handspring.com

As a PDA, the Treo works as well as any Palm, although it lacks the higher-resolution color display of the new Tungsten C, the T2 and the Zire 71. As a phone, this was my hands-down favorite of the group; after a week's use, I preferred it even to my own digital cell phone, because its well-designed interface makes it easier to use. For e-mail and wireless Internet access, the Treo was reasonably fast, though its small screen didn't work well on many Web pages. If I had to recommend just one device from this list, the Treo would be my first choice. Handspring will soon announce a successor, the Treo 600, which is sleeker (and will likely cost more) than the current unit, and that may mean that Treo 300s will be available at somewhat lower prices.

- **Overall grade: B+**
- **Value for the money: A**
- **Important specs:** 32MB memory; 0.6 in. thick; 5.6 oz.; voice memo recorder; stereo headset jack; Bluetooth, SD expansion slot, telescoping case design

⊕ **Pros:** Good phone interface
⊖ **Cons:** Wide body can be awkward to hold

Handspring's Treo 300

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Kay is a Computerworld contributing writer in Worcester, Mass. You can reach him at russkay@charter.net.

Multifunction Handhelds

Device	Operating system	Keyboard	Communication Features: Cell phone	Bluetooth	Wi-Fi	Voice dialing	Internet access and e-mail via ...	Camera	Voice memo recorder	Music player	Video player	Price
[redacted]	Palm OS 3.5	✔	✔				Sprint PCS Vision					$299
[redacted]	Palm OS 5.2.1	✔		✔	✔		Wi-Fi		✔	✔	✔	$499
[redacted]	Palm OS 5.2.1			✔			External Bluetooth		✔		✔	$399
[redacted]	Palm OS 5.2.1						None	✔		✔	✔	$299
[redacted]	Pocket PC 2002	✔	✔		✔	✔	Wi-Fi	✔	✔	✔	✔	$649

Pros: Lots of memory; Wi-Fi connectivity; great color display
Cons: Relatively expensive

Tungsten T2, $399

Palm

This is an update of the original Tungsten T [QuickLink 34680] that includes Palm's newest high-resolution color display and an extra 16MB of onboard memory, for a total of 32MB. The collapsible case design, which hides and covers the Graffiti 2 input area when not needed, makes this unit 0.75 in. shorter than its keyboard-equipped brother C, and 0.5 in. shorter than the Zire 71. Its built-in Bluetooth capability allows for an e-mail or Internet connection via a Bluetooth-equipped cell phone, but I didn't test that capability. If you don't need the fuller wireless connectivity or thumb keyboard of the Tungsten C, this is a terrific little machine

- **Overall grade: A**
- **Value for the money: B**
- **Important specs:** 32MB memory; 0.6 in. thick; 5.6 oz.; voice memo recorder; stereo headset jack; Bluetooth; SD expansion slot; telescoping case design

Pros: Small size; Bluetooth; great color display
Cons: Still low on memory compared with competitors

Palm's Tungsten T2

Hitachi G1000, $649

Sprint Spectrum L.P.
Overland Park, Kan.
www.sprint.com

The G1000 is a real gee-whiz machine that is, unfortunately, akin to the proverbial camel (i.e., a horse designed by committee). This is a Pocket PC with both a VGA camera and cell phone capabilities, wireless Internet access and a thumb-typing keyboard. Unfortunately, every one of those functions bulks up the unit, making it the largest, heaviest, most awkward to use and most expensive of this group. It will fit in few shirt pockets, and in any case, I didn't find that a comfortable way to carry it. All its functions worked, but none were especially handy. It seemed as if this unit, more than any other and more so than previous Pocket PCs, has a really complex navigation structure, and I found that doing almost anything required an awful lot of pointing and clicking steps. Because of its size and weight, I found it impossible to use the keyboard one-handed. The camera swivels vertically through 270 degrees so that it can face toward or away from you, which is a nice convenience, but its "shutter release button" is an icon rather than a physical button, and the resulting mode of operation seems quite unnatural. If you really want a single device to replace separate units, this appears to be the most consolidated device on the market, but I can't really recommend it.

Sprint Spectrum's Hitachi G1000

- **Overall grade: C+**
- **Value for the money: C**
- **Important specs:** 32MB memory; 0.9 in. thick; 8.4 oz.; camera; cell phone with voice dialing; voice memo recorder; stereo headset jack; SD expansion slot; telescoping case design

Pros: Camera, phone, PDA – it does it all
Cons: Expensive, big and heavy; awkward to hold and use

Treo 300, $299

Handspring Inc.,
Mountain View, Calif.
www.handspring.com

As a PDA, the Treo works as well as any Palm, although it lacks the higher-resolution color display of the new Tungsten C, the T2 and the Zire 71. As a phone, this was my hands-down favorite of the group: after a week's use, I preferred it even to my own digital cell phone, because its well-designed interface makes it easier to use. For e-mail and wireless Internet access, the Treo was reasonably fast, though its small screen didn't work well on many Web pages. If I had to recommend just one device from this list, the Treo would be my first choice. Handspring will soon announce a successor, the Treo 600, which is sleeker (and will likely cost more) than the current unit, and that may mean that Treo 300s will be available at somewhat lower prices.

- **Overall grade: B+**
- **Value for the money: A**
- **Important specs:** 32MB memory; 0.6 in. thick; 5.6 oz.; voice memo recorder; stereo headset jack; Bluetooth; SD expansion slot; telescoping case design

Pros: Good phone interface
Cons: Wide body can be awkward to hold

Handspring's Treo 300

Tape Types

DEFINITION

Data tapes are the principal storage medium for computer backups. They come in a variety of formats, speeds and capacities to meet different needs.

BY RUSSELL KAY

FOR ALMOST AS LONG as computers have existed, magnetic tape has been the backup medium of choice. Tape is inexpensive, well understood and easy to remove and replace.

But as hard drives grew larger and databases became massive data warehouses, tape had to change to store more data and do it faster. From 10-in. reels of 0.5-in. 9-track mainframe tape, focus shifted to the speed and convenience of tape cartridges.

Over the past 30 years, there have been many tape cartridge formats, and even today several formats are widely used. This QuickStudy aims to sort out differences among them and help explain which formats best suit various needs.

QUICK STUDY

Linear Tape-Open (LTO)

This open-format technology was jointly developed by Hewlett-Packard Co., IBM and Seagate Removable Storage Solutions (now Certance LLC), beginning in 1997.

"Open" means that tapes and drives from different manufacturers are compatible with one another. Historically, tapes could often be read only by the drive that wrote them.

LTO uses linear, multichannel, serpentine (back-and-forth) recording on 0.5-in. tape with magnetic servo for error correction and hardware data compression. An embedded electronics module can store and retrieve usage and other information about a cartridge. LTO technology was originally announced in two variants, Accelis and Ultrium, aimed at speed and capacity, respectively. However, there was oo demand for Accelis, and it has since been withdrawn.

Ultrium, a direct competitor to Super Digital Linear Tape (SDLT), uses a single tape spool inside a cartridge. The curreot second-generation Ultrium-2 tapes can store 200GB of data in native mode, or 400GB if compression is used. A March 2003 report by Gartner Inc. analyst Fara Yale states that more than twice as many Ultrium drives as SDLT drives were shipped in 2002.

Digital Linear Tape (DLT)

Developed by Digital Equipment Corp. in the 1980s, DLT is an adaptation of older reel-to-reel mainframe recording practice, where the removable media uses a single reel of tape and the drive handles the takeup end. According to the DLT Web site (*www.dlttape.com*), more than 2 million DLT drives have been sold, as well as over 90 million tape cartridges. In the most receot version, SDLT 320, optical lasers use servo tracks on the back of the tape to align the magnetic recording heads. Current SDLT drives can read older DLT media.

Advanced Intelligent Tape (AIT)

Developed in 1996 by Sony Corp., AIT uses helical-scan recording on 8mm tape, similar to that used in Hi-8 video camcorders. With a higher bit density and narrower tape, AIT cassettes are smaller than other tape cartridges, allowing for tape libraries that hold more data but take up less space.

AIT's small size makes it a good choice for organizations migrating from older systems based on the Digital Data Storage standard using digital audio tape. Sony is the only supplier of drives and media.

AIT cassettes include a memory chip inside the media cartridge to record and store format and file-location information. This lets AIT tapes load faster and cuts file search times in half.

AIT drives use IBM's Advanced Lossless Data Compression (ALDC) technology, which offers compression averaging 2.6:1 across multiple data types, vs. the 2:1 average for normal compression. Super AIT (SAIT-1) is essentially the same as AIT-3, but it uses 0.5-in. tape, giving it 500GB native capacity.

Mammoth

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The latest Mammoth-2 drive uses a multichannel helical scanning head on 8mm tape, error-correction and ALDC compression.

VXA

A unique technology developed by Ecrix (now part of Exabyte), VXA reads and writes data in packets. It operates at variable speeds, so it can match the data transfer rate of the host and, unlike drives that operate at fixed speeds, it doesn't have to stop and wait if the host is transferring data at a slower rate. That reduces wear on drives and media. VXA heads can read data from any physical location on the tape, without having to follow tracks from beginning to end.

Travan

Travan drives use a linear, single-channel recording on 0.25-in. tape. Its lower capacities and inexpensive hardware make it suitable for remote locations, small offices and individual workstation backups.

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Enterprise Tape Formats

Tape format	Generation/ model	Native storage (GB)	Compressed storage (GB)	Assumed compression ratio	Data transfer, native (MB/sec)	Data transfer compressed. (MB/sec)
AIT	SAIT-1	500	1,300	2.6	30	78
	AIT-3	100	260	2.6	12	30
	AIT-2	50	130	2.6	6	15
	AIT-1	35	90	2.6	4	10
LTO	Ultrium-2	200	400	2.0	35	70
	Ultrium-1	100	200	2.0	20	40
DLT	SDLT 320	160	320	2.0	16	32
	SDLT 220	110	220	2.0	11	22
	DLT8000	40	80	2.0	6	12
Value DLT	DLT VS160	80	160	2.0	6	16
	DLT VS80	40	80	2.0	3	6
VXA	VXA-2	80	160	2.0	6	12
	VXA-1	33	66	2.0	3	6
Mammoth	Mammoth-2	60	150	2.5	12	30
	Mammoth-1	20	40	2.0	3	6
Travan	TR-7	20	40	2.0	2	4
	TR-5	10	20	2.0	0.92	1.83

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MY LONG-TERM GAME PLAN FOR THE SHORT-TERM WORLD.

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Knowledge Base Boosts IT Reports

An open-source tool makes an ideal repository for IT security support information. By Mathias Thurman

KNOWLEDGE bases and incident-reporting applications are an important part of my information security department's tool set. Here's why: Most technically minded individuals, especially those with engineering backgrounds, don't consistently document their day-to-day activities.

In my company's IT security department, our team is responsible for the administration and upkeep of all of our applications. These include our RSA Security ACE SecurID authentication servers, intrusion-detection system (IDS) infrastructure, integrity-checking software, forensics tools, wireless-access-point detection and management software, and our data correlation environment. These applications and the operating systems on which they run continually change, so we are always tuning them, installing patches and troubleshooting problems.

Some of the time, when we figure something out, we jot down a few notes on what we did. But other times, we don't write anything down at all. That's fine as long as everyone is around and can remember what they did. But people come and go here, and we tend to forget the details.

So when a problem comes up again and again, it would be nice to be able to call upon past experience to quickly solve it. Knowledge bases are an excellent tool for doing this. We already use Houston-based BMC Software Inc.'s Remedy application for its help desk and change management functions, and we considered using that to build our knowledge base.

However, we wanted to control the administration of the application and underlying server, since it will contain sensitive security-related data. We can't do that if we're sharing that resource with another department, and buying another copy wasn't an option.

SECURITY MANAGER'S JOURNAL

After some searching, I think I've found something that fits the bill — and it's free. PhpBrain was initially developed for a gaming project, but the developer has since released the source code for use as a knowledge base. (Documentation and source code are available at *http://sourceforge.net/projects/phpbrain/*.)

PhpBrain is Web-based, can run on a standard PC and allows for easy information input, search and retrieval. In addition, it allows us to maintain control of the server and the data within it. With the Remedy server, the information would be centrally stored in another department and commingled with its data.

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If a disgruntled employee was able to obtain access to our knowledge base, he might be able to use that data to gain access to our security systems or bypass existing controls. For example, we don't have total IDS coverage. If someone knew which networks aren't protected, he might attempt to target those.

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Handling the Incidentals

Another tool that I feel is a necessity is a good incident-reporting program. When we ran an inquiry or investigation into a security incident in the past, we typically just filled out a Microsoft Word template, printed out a copy for our records and saved the document in a shared folder.

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Also, upper management frequently asks for updates on incidents, and it becomes a struggle to go through all those Word documents to come up with a graph or table delineating types of investigations and the corresponding results. For example, each week my manager wants to know how many incidents we had, how serious they were, how many man-hours we expended to deal with them, whether any proprietary data or systems were affected and any dollar loss that resulted.

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WHAT DO YOU THINK?

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SECURITY LOG

USER REVIEW

Log Parser

Microsoft Corp.
www.microsoft.com/windows2000/downloads/tools/logparser/

Reviewing Internet Information Server (IIS) Web log files on a hacked server can be a nightmare unless you have a tool to parse and correlate the data. The Log Parser utility, freely available on Microsoft's Web site, greatly decreases the amount of time and effort needed to sift through these IIS log files by letting you create and run SQL queries against the log file data. It comes preconfigured with all the common IIS field data, although Log Parser isn't limited to IIS logs. One caveat: You may need to brush up on SQL, because this tool is best used from the command line. I use Version 2.0; Version 2.1 includes a few updates but requires Windows 2003 Server.
– Mathias Thurman

NetPro Upgrades Secure ADLS

NetPro Computing Inc. in Phoenix has upgraded two components in its NetPro Secure Active Directory Lifecycle Suite that are designed to secure Active Directory installations. DirectoryInsight 1.5 supports the tracking of changes in Active Directory with Hewlett-Packard Co.'s OpenView management software. DNSAnalyzer 2.5 offers enhanced support for DNS uptime and improved reporting capabilities. Both support Windows Server 2003.

Sygate Secure Enterprise Updated

Sygate Technologies Inc. in Fremont, Calif., has announced Version 3.5 of its Sygate Secure Enterprise software, which is designed to ensure security policy compliance on internal and remote endpoint devices such as laptop computers.

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TEN

Office manager escapes clutches of desk

"At last I'm free, thanks to Nokia Mobile Connectivity solutions...and it feels great," exclaims Mary Langer, office manager.

"I thought I was imprisoned at my desk forev
no hope of any release – but at last I'm free.
I can visit more suppliers, get better deals and
whenever and however I want. Am I happy or
happy...," Mary enthused at her first taste of
Workers everywhere from CEOs to Account M
are rejoicing today
thought of a real breakth
their working lives.
Connectivity from Nokia
I can make better use
waiting time at the
CEO, Don Baker, "which gives me more
when I get home." Even sales manager,
was overjoyed as he realized his field sales
visit even more customers, now that they
securely access company data while on
"They can check emails from home, at the
he said. "And

Secure, Reliable, Freedom and Flexibility

Introducing a new era of secure, corporate business freedom and flexibility — Nokia Mobile Connectivity solutions.

Employees throughout an enterprise want to be more mobile and productive — and this can be realized thanks to Nokia Mobile Connectivity solutions. CIOs and IT managers can provide the mobility and security of anytime, anywhere access to users — while empowering everyone from the CEO to field salesforce teams with the information needed to do their work where and when they choose. Nokia Mobile Connectivity solutions include a range of IPSec- and SSL-based client and gateway products that

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BRIEFS

Cisco Offers Switch Enhancements

Cisco Systems Inc. has added two fixed-configuration switches to its Catalyst line that combine Gigabit Ethernet connectivity with intelligent switching services at the network edge. Designed to support Gigabit Ethernet to the desktop, the Catalyst 3750G-12S sells for $7,995. The 24-port 2970G-24TS will ship later this month and sell for $5,495.

Nextel Extends iDEN Coverage

Nextel Communications Inc. has partnered with RadioFrame Networks Inc. in Bellevue, Wash., to provide indoor coverage for its push-to-talk integrated digital enhanced network (iDEN) cellular radios. RadioFrame extends iDEN coverage and provides 802.11b wireless LAN service through a series of remote radios, called RadioBlades, that are cabled to a central RadioFrame processor. The average range of a RadioBlade is about 85 feet.

The vendors didn't disclose pricing details, but Reston, Va.-based Nextel said it would consider providing the system free of charge to large customers.

RadioFrame's RadioBlade

Microsoft Upgrades Business Portal

Microsoft Corp. announced the Microsoft Business Solutions Business Portal 1.2, which works with its Great Plains and Solomon ERP application suites. The software includes a human resources management self-service module and supports the distribution of reports written using Microsoft's FRx software. Pricing starts at $45 per user.

ROBERT L. MITCHELL

Why Windows Should Think Small

YEARS OF frustrating experiences dealing with Windows systems once led me to the conclusion that any Windows installation, over time, will inevitably move toward increasing randomness and disorder. This phenomenon — call it Wintropy — is less visible today because new versions of Windows do a better job of preventing complete system crashes. Problems still lurk, such as those pesky programs and patches that won't work correctly or that create conflicts and then won't uninstall cleanly. Or the legacy hardware and software that "kind of" runs, if you can just put up with a few quirks.

Windows is certainly more reliable today. But with its tens of millions of lines of code and the continual piling on of new features, applets and services, Windows may finally have gotten too big for its own good. I used to think that the bloated operating system would eventually implode under its own weight. Instead, the attackers who have been exploiting a seemingly endless supply of vulnerabilities appear to be taking it apart from the outside.

Microsoft stated some time ago that it's making security a priority under its Trustworthy Computing initiative. The company is gradually reworking the code inside Windows, and the Windows XP code base was the first to be fully reviewed using tools such as Prefix, which was supposed to help eliminate those buffer overrun vulnerabilities we still keep hearing about.

But why not reduce the vulnerabilities by paring down the complexity of Windows itself? Seems like a good idea to me, but in fact, Windows is going in the opposite direction. Each new version gets larger, not smaller. And each release adds new vulnerabilities. It's difficult to defend a house while adding more doors.

One reason Windows continues to bulk up is that Microsoft has a hard time saying no to consumers. Its traditional kitchen-sink approach to adding new features has resulted in a situation where Microsoft puts its finger in the security dike only to have another leak spring forth.

In a list of the 10 most underrated security vulnerabilities that was issued earlier this month by security engineers at Harris Corp., five apply to Windows and its components. These include vulnerabilities in the Distributed Component Object Model interface and remote procedure calls (both exploited by the recent Blaster worm and its variants), as well as issues with the NTFS alternate data streams feature, Instant Messenger and HyperTerminal programs. Likewise, Internet Explorer and Outlook continue to have their share of security problems. Given all that, one can understand the cautious approach businesses are taking with Web services, which add yet another layer of security issues.

What's worse, Microsoft still hasn't been fully enabling security defaults for fear of offending consumers. For example, the vendor included a firewall with Windows XP that wasn't totally enabled by default. Why wasn't it? Possibly because doing so might inconvenience consumers in activities such as online gaming. Thankfully, Microsoft has said it plans to change the default firewall configuration after the Blaster debacle.

Then there are the vulnerabilities in Windows features that end users don't even know exist. For example, when Microsoft issued a fix for the Universal Plug and Play buffer overrun vulnerability shortly after releasing XP, many consumers may have ignored it because they didn't realize this feature was enabled on XP systems by default.

Microsoft's response to security problems has been to quickly issue patches for its PC and server products. But large businesses are struggling to test and apply the patches quickly enough to stay ahead of attackers, and consumers can't be relied upon to install the patches at all. And since those consumer machines are connected to the same Internet on which corporate IT does business, that's a big problem.

Perhaps this lesson finally hit home at Microsoft on Aug. 16, when machines infected with the Blaster worm targeted the Windows Update Web site for a denial-of-service attack. Microsoft was lucky: The attack was unsuccessful because the worm didn't use the site's primary Web address.

All of this creates an opportunity for security tool vendors, who are happy to attack the symptoms, reacting to each threat or vulnerability with yet another virus update or patch. Even Microsoft wants to get into the security act, in essence profiting off the vulnerabilities it has created.

If the Internet is to be the conduit for e-commerce, it can't be continuously clogged by viruses, worms and exploits to which the IT community must react. Windows needs to get better in this area a whole lot faster. Microsoft should pare down the bloated operating system and stop adding services and features until it can demonstrate that it has the Windows security situation under control.

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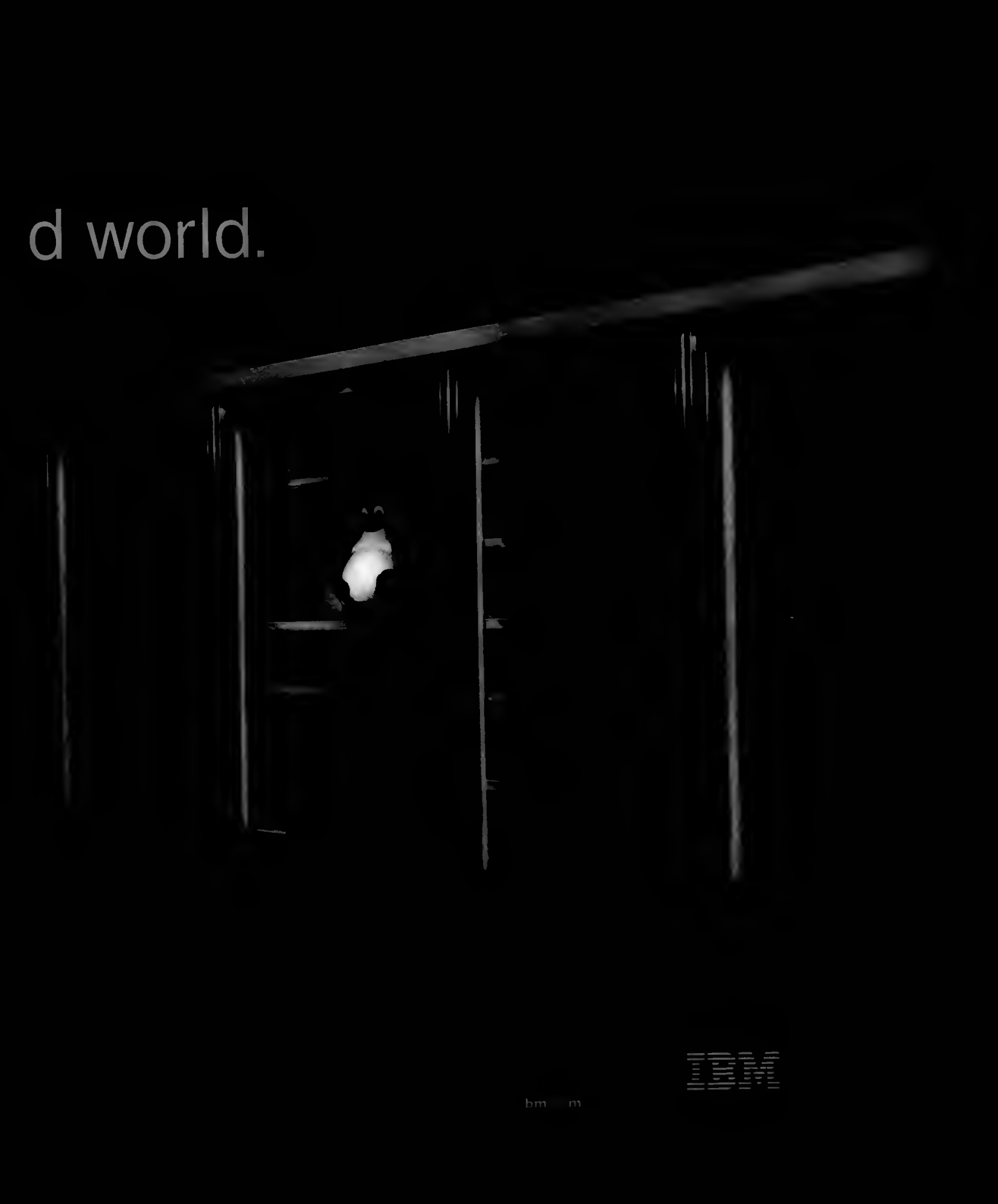
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Q&A

Why Projects Fail

Consultant Sue Young explains why project status reports are so rosy and the difference between managing risk and preventing failure. **Page 44**

Anticipating IT Needs In Pyramidal Steps

Columnist Tom Pisello says companies can calculate IT spending based on a hierarchy of needs that helps categorize and assess what's most important to the bottom line. **Page 49**

'Big Bang' Works Best

A new study suggests taking a bold approach to changing your supply chain. "Tinkering . . . doesn't necessarily make the whole better," says Bruce Blitch (right), CIO at Tessenderlo Kerley. **Page 46**

DANIEL BAXTER

PREPARING Generation Z

CIOs say college graduates aren't ready for corporate IT jobs. Now some progressive universities are doing something about it. By Thomas Hoffman

CAREERS ASK CIOs TO GIVE the nation's colleges and universities a report card on how they're preparing the next generation of IT professionals, and they'd respond with a pretty dismal grade.

"If I had to grade graduate programs on what they're delivering, I'd give them a B-minus and a C-plus for undergraduate programs," says George Voutes, enterprise technology programs manager at Deutsche Asset Management Technology, a New York-based division of Deutsche Bank AG.

"We have to get away from strict programming and systems development," says Voutes. "Those are skills to get into the field, but we have to train our technology people to think more like business people and arm them with strong communications skills."

A *Computerworld* survey of 244 IT professionals found that three quarters of them say academia isn't preparing graduates for the IT jobs of today or the next few years (see charts, page 42). The survey, plus interviews with CIOs, indicated that the shortcomings are in the areas of business skills, troubleshooting skills, interpersonal communication, project management and systems integration.

And given the thousands of unemployed IT professionals flooding the market who have at least a couple of years of work experience, CIOs and hiring managers are being more selective than ever.

"If you asked me this in 2000, my answer would have been completely different. We don't hire people into our company anymore straight out of college," says Ken Harney, a vice president at Ness USA, a global IT consultancy in Hackensack, N.J. "There aren't as many of those types of development projects around today, and those jobs can be filled easier" with people who already have business experience, he added. "I don't need a person out of college to do that. It's a whole new ballgame."

Indeed, during the height of the dot-com boom, companies were actively recruiting computer science and graduate students in the fall semesters of their final year — or earlier. Now "the recruiting process is taking longer," and enrollment among MBA candidates with IS concentrations has dropped 50% since 2000, says Andrew Whinston, professor of information systems, economics and computer science at the McCombs School of Business at the University of Texas in Austin. "When the Nasdaq bubble burst, so did our enrollment. It's a nationwide phenomenon."

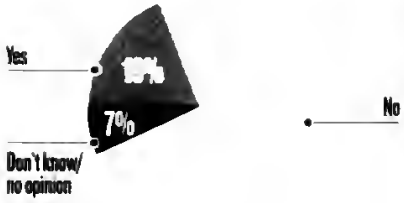
That's partly why McCombs and other top business schools such as MIT, UCLA's Anderson School of Management, Stevens Institute of Technology, Babson College, The Fox School of Business and Management at Temple University and Ohio State University's (OSU) Fisher College of Business are forging closer ties with industry to ensure that they're developing the kinds of skills being sought by the private sector (see "Hire Learning," page 42).

In addition to bringing in CIOs as guest speakers and making use of advisory councils where CIOs provide feedback on curriculum and market demands, universities are pushing harder to engage students in internship and co-op programs. They're also devising programs for vertical markets such as IT in financial services and pharmaceuticals.

But while academia is beginning to make some in-

THE STATE OF IT EDUCATION

Are colleges and universities adequately preparing students for the IT jobs of today?



Base: 227 respondents

Are colleges and universities adequately preparing students for the IT jobs of the next few years?

Base: 226 respondents

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roads in broadening the business acumen of its students, some observers say it still has a long way to go to deliver on market demands. Part of the problem is that academia "views business the same way they view everyone outside of the academic community: as a funding source, not as a place of insight," says Thornton A. May, a management consultant in Biddeford, Maine, and a *Computerworld* columnist.

Over the past 18 months, May has been working with a handful of academic institutions, such as OSU's Fisher College of Business, to help them sharpen their focus on developing business skills for computer science students.

At the university's most recent annual advisory group meeting, CIOs and other C-level officers "were consistent in the opinion that we shouldn't be teaching to a particular technology," says Stu Zweben, professor and chairman of the computer and information science department at OSU in Columbus. Zweben says the advisory group "was very supportive" of OSU's approach to teaching undergraduate computer science majors about utilizing a software engineering methodology rather than teaching them about a particular programming language like Java or C++.

More important, Zweben estimates that a majority of OSU's 1,000-plus graduate and undergraduate computer-science-related students have participated in an internship or co-op program with area businesses over the past three years.

"Employers tell me they would rather have a student with a lower GPA and more work experience than someone with a perfect GPA and no work experience who has had their nose in a book for four years," Zweben says. Plus, students are "more inquisitive" after they return to class from an internship or co-op program, he says.

MIT has had similar experiences when industry executives are brought into classes to provide live presentations on business/technology problems they've solved. Typically, the executives will submit case-study materials for MIT students to read and analyze two weeks before each presentation. Once the executive presents to the class, students tend to ask "broader questions," says Erik Brynjolfsson, a professor at MIT's Sloan School of Management and director of the Center for eBusiness@MIT.

Before each semester, MIT invites the center's 30 corporate sponsors to submit projects for teams of students to work on. The sponsors, which include General Motors Corp., Intel Corp. and MasterCard International Inc., provide teams of students — mostly MBA candidates but also some undergraduates — with business and technology problems to solve during a semester. Topics range from the challenges of implementing Wi-Fi to evaluating the benefits of a CRM project. The program "gives the students a lot of hands-on work with problems, project management skills and involvement" with IT executives, says Brynjolfsson. Plus, the familiarity that's created in the bond between students and sponsors can lead to jobs after graduation, he notes.

University advisory groups have also helped to shape new course content, such as a class on marketing information systems at the McCombs School of Business. And last December, Wellesley, Mass.-based Babson invited 15 area CIOs to review a proposed curriculum redesign for elective IT courses, says Kavin Moody, executive director of Babson's Center for Information Management Studies. CIO feedback from these sessions have influenced course offerings, including an idea to tie Web design and e-business courses together "so students would have an appreciation of what went into Web design behind e-business systems," says Moody. The ideas were incorporated into the curriculum within two weeks, he adds.

With the increasing shift among U.S. companies to outsource IT work overseas or create international IT centers, Hoboken, N.J.-based Stevens Institute has "sprinkled" the topic of managing global IT operations into its courses, says Jerry Luftman, director of the School of Technology Management.

"It's a matter of making students understand, How do you work in an outsourced environment? How do you govern the relationship between your company and the outsourcing vendor? That's an area that we cover in our classes," says Luftman. In addition, students hear what it's like to work for a vendor and how to be an IT consultant.

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QUESTION

Communication/people skills
Business skills
Real-world/hands-on experience
Troubleshooting
Project management
Analytical skills
Integration

Hire Learning

Here are examples of steps that schools have taken to help meet the IT skills requirements of the private sector:

- **MIT, Cambridge, Mass.** Before each semester, 30 companies that sponsor MIT's Center for eBusiness, including Intel, Cisco Systems Inc. and MasterCard, submit technology/business projects for student teams to work on. IT execs are also brought on campus to give presentations on IT/business problems they've resolved and discuss their approaches with students.
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- **Temple University's Fox School of Business and Management, Philadelphia.** In addition to bringing in industry speakers to discuss problems they've resolved in a specific vertical industry, the school holds breakfast meetings four times a year at which CIOs discuss contemporary topics such as enterprise integration.
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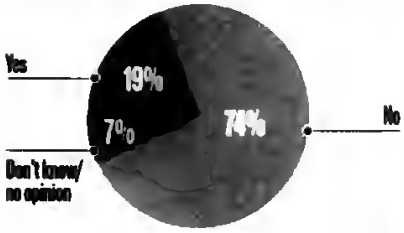

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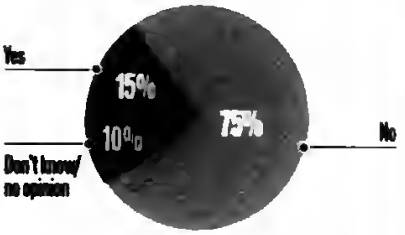

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SOURCE (FOR ALL THREE CHARTS): ONLINE SURVEY OF 244 IT PROFESSIONALS AT COMPUTERWORLD.COM JULY 23 TO AUG. 4, 2003. RESPONDENTS CAME FROM IT MANAGEMENT (39%), TECHNICAL STAFF (47%) AND CONTRACTORS/CONSULTANTS (17%).

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Why IT Projects Fail

There's a difference between managing risk and preventing failure.

Ever wondered why IT project status reports are so upbeat, managers continue to fund losing efforts, and some projects are doomed from the start? **Sue Young**, *CEO of ANDA Consulting in Colchester, Vt., thinks about that all the time. She talked with Computerworld's Mitch Betts about preventing failure in IT projects and why risk management isn't enough.*

Why are IT status reports often so rosy, even for projects in trouble? Because status isn't reported in objective, observable terms. It's often put in subjective terms like "percent done," or "red," "yellow" or "green." As long as you allow reporting to be done in subjective terms, you're going to get results that could be colored. Instead, you should look at "Is it done or not done?" where done has a clear definition. If you want to use colors, have a clear definition of what those colors mean.

Another reason is that if your reward system values compliance — not rocking the boat, looking like you're on schedule — and it doesn't value the early detection of problems, it leads to rosy status reports.

The third reason is fear, whether it's fear of looking bad or losing your job. You're not likely to remove fear in the workplace, but if you change the other two factors — status reports that are objective and observable, plus a rewards system that values the early detection of problems — then you'll have status reports that are reliable.

Are some IT projects just plain doomed from the start? Yes, I still see that. Either the data required for the project doesn't exist anywhere in the company, or the project is out of alignment with the business strategy, or the objective is simply unattainable.

Why do managers continue to fund losing efforts? One, they don't have any empirical evidence that the project can't be salvaged. Two, they want to salvage what's already been invested. The third reason is fear — fear of looking bad, fear of losing their job, fear of making a mistake.

At what point do you decide to kill the project despite the sunk costs? When you know that it can't possibly succeed. That requires knowing your definition of success. If you know that even if you pour more money into it, it's not going to be worth the benefits that you get out of it, then it's already failed, whether you keep going at it or not.

Reality Check

Many IT project crises are caused by an unrealistic schedule. How do you come up with a realistic one? Consultant Sue Young says there are seven often-overlooked things that must be done *before* you can come up with a realistic schedule:

1. Nail down the scope and requirements.
2. Prototype the biggest technical risks.
3. Create a model of the user interface.
4. Pay attention to industry-standard estimates for similar projects.
5. Let each person create an estimated task schedule for his own work.
6. Accept only observable, measurable status reports (such as "done" or "not done," with a clear definition of *done*).
7. Subdivide all the tasks until each task takes one to two weeks to complete.

It sounds like a lot of work before even starting the actual project. "That's right. But if you want a realistic schedule, that's the way to do it," Young says. "To create a schedule before the scope and requirements are known is absurd, and yet we see it all the time."

In fact, doing steps such as prototyping the most difficult technical portion of the project may show that the project isn't feasible, Young says. "It's better to find that out upfront."

What's the best way to kill a project? I don't know that there's a best way. One way that seemed to work very well was that one company had a meeting first thing in the morning, fired the consultants and contractors, told the managers to figure out how to redeploy the resources, and everyone else was told they had the day off and to come back tomorrow to find out what they'd be doing. It was clean and efficient.

Are most project failures caused by technical problems, people problems or business problems? People problems. Business and technical problems boil down to people problems. Calling something a technical problem is a convenient label to say "It's not something I can handle." If the server goes down, "it's a technical problem." Well, you either fix it or get someone to handle it. It's a people problem. People solve problems. People create problems. "It was a technical problem because the software was buggy." Well, it was people who created buggy software or made the decision to buy the software. It's the extent to which we take responsibility for solving problems that gets them solved.

The myth of IT is that it's about computers and technology. It's not — IT is about people.

So why do IT projects fail? No one prevented them from failing. We define success as a lack of failure and failure as a lack of success. If you eliminate the possibility for failure, the only possibility you have left is success.

You can try to do all the things to make something succeed and still be blindsided by something you didn't notice, didn't consider. So trying to do all the right things won't necessarily ensure success.

In risk management, we look at what might be a problem. In failure prevention, we look at what will definitely cause this to fail and let's make sure it doesn't happen.

Compared to the causes of failure, risks are friendly. You can watch them, mitigate them, see if they happen. Risks have a probability. But there are definite causes of failure that, if you have them in your project, your project will fail, like objectives not aligned with business strategy or missing data. And if you have something that will definitely cause your project to fail, there's only one thing left to do, and that's to get rid of it.

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Why IT Projects Fail

There's a difference between managing risk and preventing failure.

Ever wondered why IT project status reports are so upbeat, managers continue to fund losing efforts, and some projects are doomed from the start? **Sue Young**, *CEO of ANDA Consulting in Colchester, Vt., thinks about that all the time. She talked with* Computerworld's *Mitch Betts about preventing failure in IT projects and why risk management isn't enough.*

Why are IT status reports often so rosy, even for projects in trouble? Because status isn't reported in objective, observable terms. It's often put in subjective terms like "percent done," or "red," "yellow" or "green." As long as you allow reporting to be done in subjective terms, you're going to get results that could be colored. Instead, you should look at "Is it done or not done?" where *done* has a clear definition. If you want to use colors, have a clear definition of what those colors mean.

Another reasoo is that if your reward system values compliance — not rocking the boat, looking like you're on schedule — and it doeso't value the early detection of problems, it leads to rosy status reports.

The third reason is fear, whether it's fear of looking bad or losing your job. You're not likely to remove fear in the workplace, but if you change the other two factors — status reports that are objective and observable, plus a rewards system that values the early detection of problems — then you'll have status reports that are reliable.

Are some IT projects just plain doomed from the start? Yes, I still see that. Either the data required for the project doesn't exist anywhere in the company, or the project is out of alignment with the business strategy, or the objective is simply unattainable.

Why do managers continue to fund losing efforts? One, they don't have any empirical evidence that the project can't be salvaged. Two, they want to salvage what's already been invested. The third reason is fear — fear of looking bad, fear of losing their job, fear of making a mistake.

At what point do you decide to kill the project despite the sunk costs? Wheo you know that it can't possibly succeed. That requires knowing your definition of success. If you know that even if you pour more money into it, it's not going to be worth the benefits that you get out of it, then it's already failed, whether you keep going at it or not.

Reality Check

Many IT project crises are caused by an unrealistic schedule. How do you come up with a realistic one? Consultant Sue Young says there are seven often-overlooked things that must be done *before* you can come up with a realistic schedule:

1. Nail down the scope and requirements.
2. Prototype the biggest technical risks.
3. Create a model of the user interface.
4. Pay attention to industry-standard estimates for similar projects.
5. Let each person create an estimated task schedule for his own work.
6. Accept only observable, measurable status reports (such as "done" or "not done," with a clear definition of *done*).
7. Subdivide all the tasks until each task takes one to two weeks to complete.

It sounds like a lot of work before even starting the actual project. "That's right. But if you want a realistic schedule, that's the way to do it," Young says. "To create a schedule before the scope and requirements are known is absurd, and yet we see it all the time."

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'Big Bang' Works Best

When it comes to supply chain improvements, bold action yields a bigger ROI than incrementalism.

By Peter A. Buxbaum

LAST YEAR'S MERGER of Hewlett-Packard Co. and Compaq Computer Corp. gave rise to more than just a bigger company. It also presented an opportunity for the combined corporation to streamline processes and cut costs, especially in the supply chain.

The new HP delivered $3.5 billion in reduced costs one year after the merger, the company says. Of that, $1.5 billion was associated with supply chain reductions. Could such impressive results have been achieved without going through a huge and tumultuous merger?

A paper published recently by the management consultancy Booz Allen Hamilton Inc. suggests that companies taking bold approaches toward revamping their supply chains are likely to achieve better results than those that merely tinker with them. Those conclusions seem obvious to many supply chain and IT practitioners. But not every supply chain problem is a candidate for the "big-bang" approach, and most companies require some cataclysmic event — in HP's case, the merger coinciding with a high-tech downturn — in order to make it happen.

Booz Allen's survey of 200 industrial companies in North America, Europe, Asia and Latin America found that companies willing to "break constraints" — consultantspeak for transforming supply chain management into a multidisciplinary process that cuts across departmental lines — achieve 36% to 55% more savings than companies willing only to make adjustments within their existing supply structures. Why does revamping a supply chain yield better results?

A company's supply chain is a multifaceted entity, often including a myriad of transportation, warehousing and procurement relationships, practices and systems, as well as a company's vendors, customers and distribution systems. Tinkering with the supply chain might change just one or two of those elements, such as renegotiating trucking contracts or relocating distribution centers. Revamping the supply chain involves re-examining and completely optimizing the process from A to Z.

"Supply chains have typically grown organically and without comprehensive thought to consistency or the interrelated nature of the process," says Bruce Blitch, CIO at Tessenderlo Kerley Inc. (TKI), a chemicals company in Phoenix. "Tinkering [with] a few links doesn't necessarily make the whole better. In fact, it may even make it worse by focusing the strain on the weakest links. You can't expect revolutionary change from an evolutionary process."

In the case of HP, the company consolidated 40 separate geographical and product-line supply systems into five generic supply chains based on common attributes, according to Dick Conrad, HP's senior vice president for global operations and supply chain services. HP's formerly decentralized supply system and Compaq's relatively centralized model were discarded in favor of a pragmatic approach based on individual supply chain needs. And 70% of the company's logistics providers were replaced.

Catalyst Required

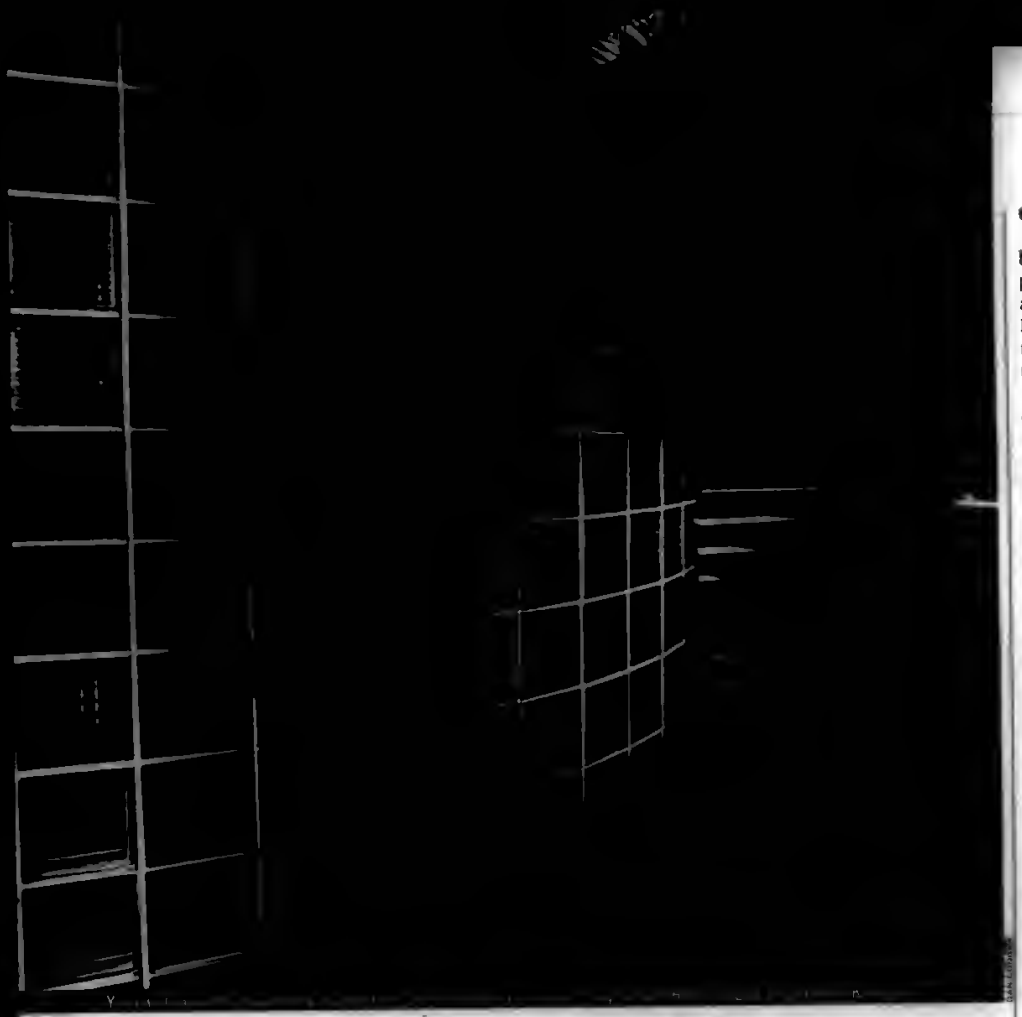
"Major improvement in an organization's business processes usually requires a catalyst," says Blitch. TKI's catalyst came in the form of an SAP R/3 implementation five years ago.

"Implementation of SAP as an enterprise information backbone meant that we had a chance to review business processes from a macro perspective, as opposed to the usual day-to-day basis," Blitch explains. "We sat down as a group and talked in a quiet environment in a room full of whiteboards. Once we got the whole supply chain process down, we saw that it was a spider web with so many interconnecting pieces that there was no way to deal with one segment without bringing it all together."

ROI

So TKI consolidated its customer service, distribution and inventory management functions — formerly handled by separate departments — under a single head. Blitch says the benefits of that integration included greater visibility of inventory, reduction in transportation assets and costs, and an improved ability to react to supply chain changes. "Disruptions that formerly would have been a challenge to overcome, such as product outages, customer requirement changes or rail carrier transportation disruptions, are now dealt with by a single organizational entity," he says.

The revamping of HP's supply chain likewise took place in an atmosphere of quiet contemplation. "Prior to the merger, we picked several senior executives from both companies, exonerated them of their former duties, and quarantined them in a 'clean room,'" recalls Conrad. That group's accomplishments in-



tough times, CIOs seek smaller victories.

Because of the economic downturn, buyers have been less receptive to large-scale supply chain IT projects that require long, complex implementations and internal change, says Romala Ravi, an analyst at Framingham, Mass.-based IDC. Instead, Ravi says, there's a clear preference for small-scale projects that fix immediate problems and have a quick ROI.

Benny says that he's a "big supporter of the concept of breaking constraints" and that such projects generate "a great deal of excitement, fun and challenge," but he adds that not every problem represents an opportunity for that kind of project. "There are many times when a series of five or 10 smaller Band-Aid-type projects can add significant value," he says. Smaller projects often focus on specific customer needs and requests.

Lapide says there's a trade-off between the big-bang and Band-Aid approaches. "You can generate savings of 5% to 15% when you implement point solutions for transportation, warehousing or order management," he says. "The downside is that achieving departmental goals might defeat company goals. Lowering transportatioo costs might be bad for customer service," for example. A company that implements a transportation management program that consolidates outgoing shipments into full truckloads, for instance, will save on transportation costs, but its customer service might suffer because deliveries will be slower.

Implementing supply chain management on a cross-functional basis, on the other hand, allows "the whole to be greater than the sum of its parts," according to Lapide. "But the bad news here is that now you need to change what each department does and to get them to work better with other departments," he says. "Putting a new business process in place means changing people's jobs and getting them comfortable with that. It won't work unless you put a great deal of effort into change management."

HP's Conrad acknowledges that the big bang isn't appropriate for every time and place. "You have to balance the need for fundamental change against meeting customer requirements," he says. "Yon can't disrupt customer service or detract from revenues for the sake of revamping the supply chain."

In the absence of optimal conditions, Conrad suggests embarking on a continuous improvement approach. "If you are constantly fine-tuning your results, there is really no discernible difference over time," he says. "But when the company is undergoing some other fundamental change, that is the time to seize the opportunity and jump ahead in the marketplace by restructuring."

Besides coinciding with the Compaq merger, HP's supply chain efforts also benefited from the high-tech industry downturn, according to Conrad. "Had tech been booming at the same time," he says, "it would have been like changing engines on a 747 while it was still in flight."

Buxbaum is a freelance writer in Potomac, Md. He can be reached at pab001@aol.com.

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cluded identifying the two companies' common parts and lowest-cost suppliers, which allowed the merged company to take advantage of lower prices and save $300 million.

'Burning Platform'

Other companies don't have the luxury of meditating on the supply chain in a rarefied atmospbere. "From what I have seen, major changes come wheo a business is in crisis from a shareholder value perspective or when it is in danger of losing a customer," says Robert Benny, director of systems and process integration at Motorola Inc.'s Semiconductor Products Sector, a $4.9 billion annual business based in Austin. "When the business needs to be turned around, it becomes imperative to do business differently."

A major crisis, or "burning platform," as Larry Lapide, an analyst at AMR Research Inc., puts it, forces a company to focus oo a particular issue. For example, "some companies got burnt as a result of the West Coast dock strike last year," Lapide says. "They realized they could no longer count on their supply from the Far East. They needed to figure out how to operate their supply chains without disruption."

When a strategic issue arises, notes Benny, the corporate executive level is galvanized to drive major change from the top down. CEO participation in supply chain transformation was one of the key success factors identified in the Booz Allen report.

Big-bang supply chain projects may produce a better return on investment, but the reality is that in

What Works, What Doesn't

Booz Allen Hamilton's study says the supply chain management field — at age 21 — "continues to fall short of its great promise." The firm's survey of 200 industrial companies identifies the following issues:

- **Executive participation is important.** In companies where responsibility for supply chain management resides below senior management, annual savings in manufacturing costs are just 55% of what they are when the function is integrated with business strategy at the CEO level.
- **"Breaking constraints" (a major overhaul) yields better results.** Companies willing to reorganize the entire supply chain achieve savings that are 36% to 55% greater than those of companies willing only to make adjustments.
- **Commitment is key.** Companies that classified their supply chain management efforts as "significant" or "Herculean" reported annual purchasing savings that were 26% higher than those of companies with lower levels of commitment.
- **Technology alone isn't the answer.** Nearly half (45%) of the companies said their supply chain IT systems have failed to live up to expectations. Human insights, creativity, dedication and patience are also required for success.

– Peter A. Buxbaum

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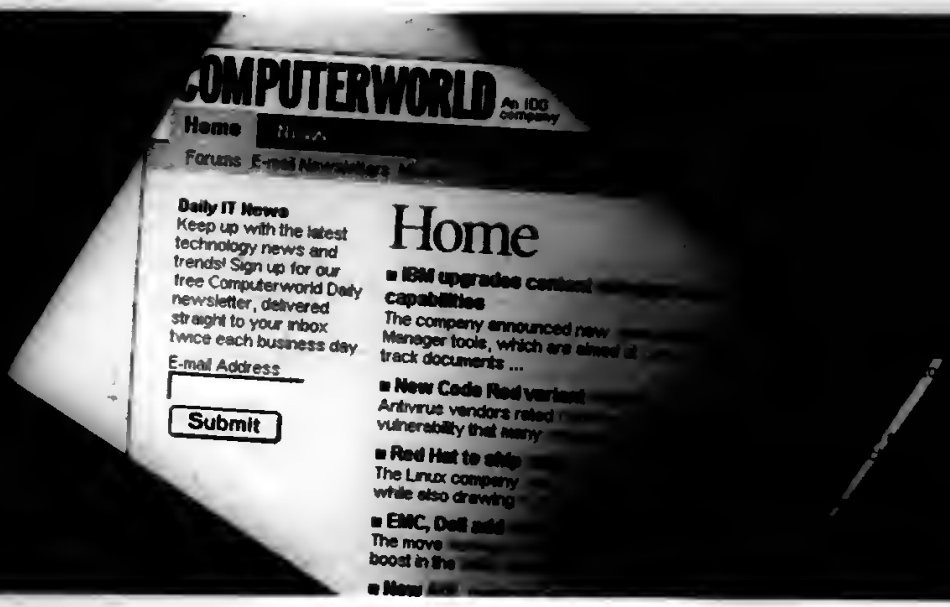

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BRIEFS

Travel Web Site Names New CIO

MetroGuide.com Inc., a travel and hospitality Web site based in Hollywood, Fla., has hired David Lefavor, 55, to fill its new executive-level CIO position. He was previously vice president of IT operations at market research firm Information Resources Inc. and has many years of experience working in IT management and systems architecture at United Air Lines Inc., Galileo International Inc., Westin Hotels & Resorts and Doubletree Hotels. As CIO at MetroGuide, Lefavor will lead IT teams in application development, Web site management, systems infrastructure and internal business systems.

New Career Site Serves Coders

JobLink Systems Inc. in Deerfield, Ill., has launched a career Web site for people in the software industry. The site, SoftwareJobLink.com, provides links to job postings on the Web pages of leading vendors such as EMC Corp., Siebel Systems Inc. and Sun Microsystems Inc., as well as other sources such as SoftwareCEO.com.

IT Job Market Looking Brighter

Job seekers are spending less time looking for jobs, and employers are more interested in job candidates who have specific skills than in those with broad industry experience, according to a report from executive outplacement firm Challenger, Gray & Christmas Inc. in Chicago. It recommends that job candidates emphasize their professional accomplishments at previous jobs, technical skills and decision-making abilities and delete the "personal goals" section on their résumés.

TOM PISELLO

Anticipating IT Needs In Pyramidal Steps

WHAT'S the most important IT consideration for 2004 budget planning? That depends on where a company stands in its IT maturation and what it's trying to achieve.

There's a progression in IT spending priorities, where basic IT needs must be met before more sophisticated initiatives can be pursued — much like in human development. Understanding this progression, and its opportunities and risks, can help IT decision-makers identify the investments that will deliver bottom-line impact and competitive advantage.

Most companies have the IT basics: a computing infrastructure such as computers, printers and networks. At this level, maintenance and cost control are the priorities for these commodities, which deliver very little competitive distinction. By building on this infrastructure, more highly developed needs are emerging for companies to achieve advantage through business-process optimization and information management. Today's emerging IT needs will give rise to the next level of need — each more strategic than the one before.

This concept draws on Maslow's hierarchy of needs, which asserts that people are motivated by unsatisfied needs and that certain basic needs require satisfaction before higher ones can be addressed. Lower needs include air, water, food and sleep. Higher needs include love, self-esteem and self-actualization. When each level is satisfied, higher-level needs emerge.

How can CIOs apply this theory to making IT investment decisions? Maslow's theory may offer insight into a new pattern for setting priorities, where new levels establish a company's focus for investment and competitive advantage, and prinr investments are treated as a commodity — a utility managed for cost savings.

For IT, this means that basic levels nf needs have been met and that the playing field has moved to a higher plane, where the investments are substantial, innovative and crucial for corporate success.

The IT hierarchy of needs has four levels of evolution and investment, from basic computing assets to full-fledged information warfare. The pyramid looks like this:

Computing infrastructure. The prior era nf IT was focused on the infrastructure needed to boost productivity by improving efficiency and reducing overhead. Trillions of dollars have been spent to implement data centers, networks, PCs and personal/business applications. This outs-and-bolts infrastructure has become a commodity.

Internet and enterprise software. The advent of the Internet and enterprise software moved the strategic focus nf IT investing upstream to enhance productivity across the entire value chain, from customer-facing applications and supply chain integration to business-process optimization. These needs aren't yet fulfilled in every company, but the software is starting to become a commodity, as evidenced by the recent consolidations in the ERP market.

Knowledge capital management. The newest IT battleground focuses on the *information* in IT, rather than the *technology*, and on turning that information into revenue. Today's true innovatioo is providing the means for maintaining and extending the value of a firm's most valuable resources: its knowledge capital. That means managing the rapidly exploding accumulation of scientific, research, customer, engineering, property and intellectual assets with data warehouses, enterprise portals, analytics and business intelligence. Companies that can apply such knowledge will achieve competitive advantage over the next decade.

Information warfare. Once the basics of knowledge capital management are covered, the focus will move from reactive information analysis to the proactive control of information as a competitive weapon. The battlefield nf this futuristic era of information warfare is ambiguous at this point, but it takes its lead from the military. Solutions will enable information distortioo or denial and the countermeasures to fight such attacks. Expected components include hacker warfare, where computer systems are attacked; psychological warfare, where information is used to change the minds of friends, neutrals and foes; and economic information warfare, which involves blocking or channeling information to pursue economic dominance.

The IT hierarchy of needs can help companies categorize investments and assess what's most important. Under this model, the lowest total cost nf ownership is the most important consideration for technologies at the commodity level. Where innovation still reigns — at the higher levels — value matters most, and competitive differentiation can be gained with the right projects and spending plans.

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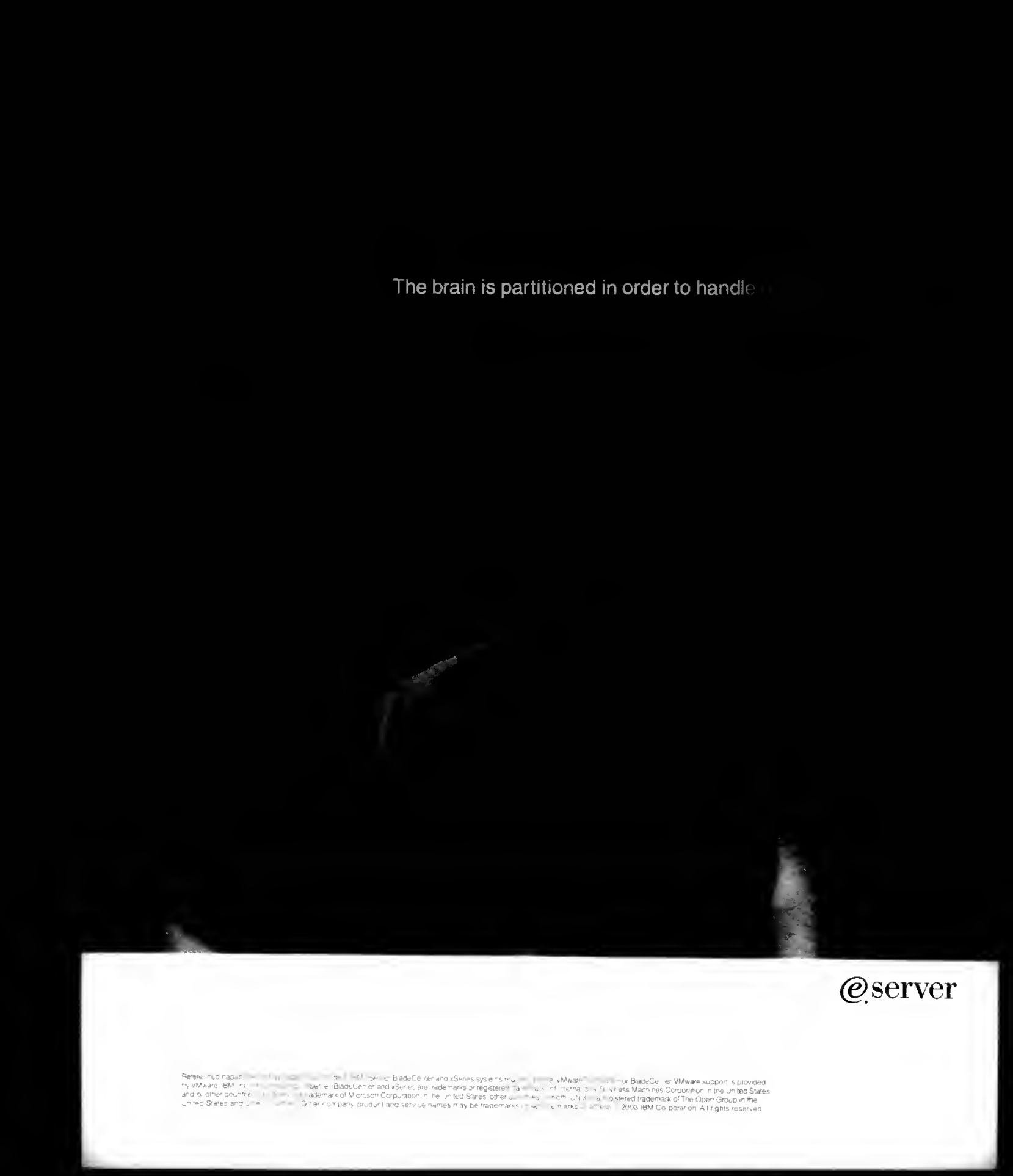
The brain is partitioned in order to handle

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IT Careers in Consulting

Graduating college seniors rank consulting as the number two career of choice, behind entertainment/media, according to the Universum Communications annual survey That's good news for consulting firms, large and small, which are hiring new graduates and seasoned IT professionals.

Despite major downsizing that applied to every job category from 2000 to 2002, there are several strong consulting opportunities in 2003 Utilities, transportation, manufacturing and defense/security are all categories where consulting expertise will be sought out in the coming months. Rapid change is needed to meet new challenges, as well as longer term investments in information technology

While consulting was hard-hit by the economy and by corporate leadership issues, firms were restructuring and refocusing priorities. Accenture became an independent group of consultants as of January 2001, while PricewaterhouseCoopers sold its business consulting unit to IBM Deloitte Consulting remains part of Deloitte Touche but operates independently JDEdwards is merging with PeopleSoft.

The larger consulting firms are hiring in a range of areas, from the information technology that enables them to serve clients to the actual customer-facing consultants. For instance, at Accenture, the Technology Solutions group is home to application, software and architecture development expertise, while business consultants provide the link to clients between in-depth business knowledge and how technology can be applied to meet that specific business sector's challenges.

According to Laurie Ryan, spokeswoman for Accenture which currently employs 75,000 worldwide, the company hires both from college campuses and from among more seasoned professionals. Accenture lists job openings in areas ranging from development and architecture to Tier 3 support and services delivery.

While specific 2003 hiring numbers for the major consulting groups aren't being provided, the larger firms are hiring a strong mix of experienced IT professionals and new IT graduates. Small firms are also hiring, sometimes combining consulting with offshore and domestic outsourcing.

Cognizant Technology Solutions, based in New York, is among those serving as a conduit to offshore resources for the more routine development and support functions. Larry Gordon, Cognizant's vice president for marketing, says the firm hires about 30% of its IT professionals in the United States. Among them is a cadre of business consultants who have experience with profit/loss operations and who have in-depth business acumen in one of the company's vertical markets. He lists these, specifically, as banking, retail/consumer products, insurance and healthcare insurance. In addition to client partners and practice leaders, the company is looking for experts in transaction and payment solutions.

Geographically, the opportunities continue to center on Boston, New York, Virginia and North Carolina in the East, Chicago and Dallas in the central part of the country and Seattle, Los Angeles and San Diego in the West.

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NC Eye Care center seeks DBA/Programmer f to assist w/design development, operation maintenance of database systems utilized by org provide technical direction recommendation & advice to users concerning database administration under mangr's direct supervision assist w/network administration security enforcement of company wide policies procedures for data entry systems integration/automation of reports evaluation of new features of systems for development feasibility Min req Bachelor's in Electronics Engineering/Comp Science & 3 mos in job/job related exp including C/C++ Visual C++ Visual Basic Sun Solaris Script DOS Batch files Oracle Forms/Reports PowerBuilder SQL*Plus PL/SQL Access VBA Excel Macro Oracle DB Progress DB MSSQL, Windows (95/98/NT/2000/XP) SunOS Solaris, SCO UNIX ClearCase TCP/IP Database Administration (DBA) UNIX Administration Software Configuration Management Project Lead Resumes to Jose Natal, 2325 Sunset Ave Rocky Mount, NC 27804 No calls EOE

Junior Programmer Assist in design/development conversion software programs Analyze & interpret specifications & info from airlines, create data conversion programs fix software bugs, & make program modifications utilizing Power Builder and Oracle Export & import Oracle databases through remote access and PC Anywhere access programs Apply updated program releases of company's software to customer databases Bachelor in computer science or related 1 yr exp Competitive salary 8AM-5PM Resume to Henry Parra VP TRAX USA Corp, 2665 S Bayshore Dr #501 Coconut Grove FL 33133 (305) 357-4488

COMPUTER PROFESSIONALS

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- QC ANALYST
- WEB ARCHITECTS/ DEVELOPERS
- SYSTEMS ANALYSTS
- WEB GRAPHIC DESIGNERS
- NETWORK ENGINEERS
- PROGRAMMER/ANALYSTS
- SOFTWARE ENGINEERS

SKILLS
- COLD FUSION • SPECTRA
- ORACLE • VISUAL BASIC
- VISUAL C++ • SIEBEL • ASP
- COM DCOM • JSP • HTML
- JAVA, JAVA BEAN • EJB JAVA SERVLETS • WEBSPHERE
- IBM MQ SERIES • XML UML
- MTS • CLARIFY • PERL
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Application Developers needed at unanticipated client sites to perform db performance analysis schema re-dsgn & normalization tuning issues by leveraging complex JDBC calls to stored procedures & dvlp scripts in LoadRunner WinRunner & XRunner Dsgn & implmt web dispatcher based on Struts Web Application Framework & dsgn s/ware & h/ware re-architecture Send resume to Global Consultants, Attn Hiramo, 25 Airport Rd, Morristown, NJ 07960

Sr Systems Analyst - Lawrenceville NJ Lead turnkey project to dsgn dvlp & maintain XML/Internet based systems for environmental regulatory agencies Applying environmental business logic to lead s/ware life cycle dvlpmt incl user reqmt analysis systms analysis dsgn, coding, testing & implmtg applics under Microsoft NET using XML XML Schema, Web Services, & end-to-end messaging level security technology Research innovative s/ware applics & conduct feasibility study Must possess MS in CompSci Environmental Engg or Chemical Engg with min 2 yr of exp in s/ware dvlpmt Strong skills in XML, XML Schema, C# Microsoft Net ASP.NET Web Services Technology, & Biz Talk Server Send resume w/salary reqmt to HR Mgr Enfotech 11 Princess Rd Unit A Lawrenceville NJ 08648 Refer to job#SYS018

Database Systems Analyst/Project Programmer

Uses various database systems management tools to program Oracle procedures and triggers with PL/SQL to insure that gene ontology data is capable of being integrated and uploaded into RGD and related Bioinformatics database management systems Uses principles of database management to create PERL Scripts for automatic database files as well as developing enhanced search reports and tools for implementation and related web sites Requires Master's Degree in Computer Science or Computing. Send resume, no calls to

Medical College of Wisconsin
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8701 Watertown Plank Rd
Milwaukee WI 53226
Fax 414-456-6502

Software Engineer (Atlanta GA) Provide product leadership for complex software development projects Manage definition of product requirements and creation of design documentation leading to coding and testing of software application for retail industry Review development artifacts from project members for quality characteristics and adherence to development standards and corporate methodology Manage creation of new feature documentation suitable for use by customers and internal sales marketing training and support depts Review existing programs or formulate logic for new systems using structured programming or object oriented analysis and design techniques Requirements Master's or equivalent degree in Computer Science Math or related field plus 2 yrs. Software development experience Competitive salary offered Apply on-line at www.retek.com/apply Be sure to include ComputerWorld as the source code

Z3 Technologies Inc a fast Growing software firm is looking for a Computer consultant. Should have bachelor's degree in computer science/related field with 2 years experience in Requirement Analysis, Design and development Resolving the technical issues Programming in Cognos Impromptu, PowerPlay, IWR, MSSQL PLSQL, DB2, Win2k, WinNT and skilled in Oracle

We accept foreign education equivalent of the degree or the degree equivalent in education and experience Send resume and covering letter to Z3 Technologies Inc 1803 Shepherd Ct 335 Waukesha, WI-53186, resumes@z3tech.com

Z3 Technologies, Inc. a fast Growing software firm is looking for a Computer consultant Should have bachelor's degree in computer science/related field with 2 years experience in Requirement Analysis Design and development Resolving the technical issues Programming in Oracle Applications **GL, AP, AR, FA, PO, INV, OM, CM, BOM modules** versions 11/11i Unix, Sun Solaris and skilled in Oracle Reports Forms Discoverer We accept foreign education equivalent of the degree or the degree equivalent in education and experience Send resume and covering letter to Z3 Technologies Inc 1803 Shepherd Ct 335 Waukesha WI-53186
resumes@z3tech.com

Software Engineers and Programmer Analysts for Software company in Camp Hill, PA All positions require Bachelor's degree in Comp Science/ Computer Engineering or related field and 1-3 years related experience Send resume to Rashi Information Services Inc, 214 Senate Avenue, Camp Hill, PA 17011 Attn Ravi Jaganmohan

Trading Systs Dvlpr wanted by Investmnt & Trade Support Services Co in Manh Build derivative models for trading write financial systs reports for products including fixed income equity, futures options derivatives &/or foreign exchange. dvlp trading appls design & dvlp risk mngmnt reports Bach in Comp Sci & 2yrs exp in job offered req Respond to CT/HR Dpt PO Bx 4241 GCS NY 10163

System/Programmer Analysts wanted by Magnum Software Services (small but stable) Candidates will use Java SQL Oracle for business analysis and application design must have BS in computer science/engineering Please contact kiran@mgnmsoft.com for details EOE

Sasha Tech & Circuits International a certified minority-owned business enterprise is looking for Sales Engineer with direct account responsibility selling custom manufactured electronic components Must have BS with exp in tariff calculations Please apply at team@staokc.com

Programmer Analyst Dev custom software for Co using SAP & Eagle Pace Support & enhance existing apps. & databases. Design & implement new database schemas, new software apps incl Web-based apps using IT tools incl ABAB/4 BAPIs RFC, BDC, Plumtree Visual Interdev Embarcadero ER Studio SysAdmin VBScript, MTS, MS SQL Server & COM/DCOM in MS environment Req Bachelors in Comp Science or Comp Eng 40-hr wk Job/ Interview Site Boston, MA Send resume to recruit@Smallboard.com PMB#121 18 Washington Street, Canton, MA 02021

Silverman Law Firm seeks applicants for the position of System Administrator in Englewood, CO to engage in moderately complex tasks involving software configuration management and network systems administration for law firm Requires experience in design of software configuration management and implementation procedures design implementation and support of computer network and communications technologies and maintenance and support of computer hardware assets Requirements also include a working knowledge of configuration management and implementation procedures for FMI Tucana CLS and JST commercial legal collection software packages Respond by resume to David Silverman Silverman Law Firm 13111 E Briarwood Ave #340 Englewood CO 80112

Software Engineer Sioux Falls, SD Research design & Dev Comp soft syst, in conjunction with hardware product dev Consult with hardware eng & other eng staff to evaluate interface between hardware & software & operational & performance req's of overall system Provide technical guidance on client projects Wis use Win NT/95 Unix AS/400 dev 2000 ABAP/4 Oracle RDBMS DB/400 OS/400 SAP Visual Basic MAPICS (MRP) Workstream Auto CAD MS Access DOS Req'd Bach in eng/math/CS or MIS & 5yrs exp or masters + 2 yrs exp on the job or as a Programmer Analyst or IT Consultant $70,000/yr 8AM-5PM MON-FRI 40hrs wk send 2 resumes to South Dakota One-Stop Career Center 811 E 10th Street, Sioux Falls SD 57103-18500 Tel (605) 367-5300 Fax (605) 367-5308

PROGRAMMER/ANALYST to design analyze code debug implement and maintain e-commerce applications software and relational database for automotive industry using object oriented techniques C/C++ dBase Lotus 1-2-3 and HTML design develop and support internet-based e-commerce applications using Java Visual Basic and Oracle Require B S in Computer Science/Mathematics Competitive salary and benefits 40-hour week M F 8 30 am to 5 pm Apply with resume to President SKCO Investments Corporation 7354 Airport Blvd Mobile AL 36608

Technical Consultants needed at unanticipated client sites to be involved in business processing transactions based on XML docs analyze design dvlp implmnt modules XML schemas & messages dvlp JSP & XML parser to dvlp web enabled front end for insurance s/ware prdcts & be involved in QA & customer support Send resume to Altam Tech, Attn B Oakes, 350 Baldwin Towers, Eddystone PA 19022

Prog/Analysts to analyze design appls using C++ Java, HTML, VB JavaScript, Weblogic SQL Oracle MS Access under Windows UNIX OS perform and document data modeling; study evaluate new technologies/methodologies gather document reqs from user community test/troubleshoot project appl code Require BS or foreign equiv in CS/Engg (any branch) with 2 yrs exp in IT High Salary Travel involved F/T Apply to HR, Unilinx, Inc. 4625 Alexander Dr. Ste 110, Alpharetta, GA 30022

SOFTWARE ENGINEERS (12 positions) require Bachelor's or equivalent in Engineering/ Computer Science/Mathematics/Science or closely related field with two years experience providing skills in described duties or $79 000 per year Provide on-site consulting in design analysis and development of software applications for legacy systems in IBM mainframe environment development and administration in Oracle DB2 SQL Server and Sybase e-commerce and web applications development in Microsoft Java and related technologies network management systems development with Netscape Server and related tools SAP R/3 applications on Windows with DOS and ABAP/4 and related modules 40% travel to client sites in the United States Mail resumes to Y&L Consulting Inc 605 17th Avenue East Moline IL 61244

Programmer
Provider Billing Services Inc seeks a programmer to work in Denver CO to under close supervision engage in moderately complex tasks involving the development of medical billing computer software applications that run on JBOSS application server with MySQL relational database Convert project specifications and statements of problems and procedures to detailed Unified Modeling Language (UML) for coding Code test and debug the applications Utilize Java Swing J2EE ANSI standard X12 Electronic Data Interchange EJB/CMP (container managed persistence) Aspect Oriented Programming (AOP) NetBeans IDE and CVS version control in development process Requires a Bachelor's or foreign equivalent in computer science working knowledge of technologies listed in the job description Respond by resume to James Peterson Provider Billing Services 500 E 84th Ave Ste C-6 Denver CO 80229

Z3 Technologies, Inc a fast Growing software firm is looking for a Computer consultant Should have bachelor's degree in computer science/related field with 2 years experience in Requirement Analysis Design and development Resolving the technical issues Programming in Sun Solaris AIX HP-UX HACMP/ES IBM RS/6000 IBM SP2 Lotus Domino Win2k WinNT and experienced on various IBM platforms We accept foreign education equivalent of the degree or the degree equivalent in education and experience Send resume and covering letter to Z3 Technologies Inc 1803 Shepherd Ct 335 Waukesha WI-53186
resumes@z3tech.com

Prog/Analysts to analyze design, develop and maintain custom business appls in client server environment using C Java EJB JSP/Servlets XML VisualAge Weblogic COBOL CICS Oracle etc. design/develop enterprise appls/including B2Band B2C for multi OSs design develop Java applets & run batch process to generate reports, perform code development quality control testing and performance tuning in a project lifecycle Require Bachelor's Degree or foreign equiv in CS/ Engineering (any branch) or related field with 2 yrs exp in the software industry High salary F/T some travel involved Resumes HR, Opal Soft, Inc 3180 Almaden Expwy Ste 205, San Jose, CA 95118

Full-time OpenHR Project Manager Manage the design development, implementation and support of OpenHR SAP module projects throughout the U.S. utilizing in depth knowledge of external interfaces in the area of SAP HR reporting org charting org mngmnt Comp mngmnt and Benefits Recruitment Expenses Time mngmnt ESS and MSS manage tech config of projects and provide tech oversight to team of specialized consultants responsible for integrating OpenHR solutions utilizing expertise in ASP JSP scripting XML DCOM JCO ABAP SAP Data Dictionary BAPI s RFC s SAP portal work flow and user authentication methods serve as chief liaison with clients and develop new project opportunities Must have a B S or higher degree or foreign equiv in IT or a related field and to least 4 years of experience as SAP HR Programmer including at least 2 5 years experience in implementation and configuration of OpenHR framework or similar technology Must be willing to travel to client sites M-F and have proof of legal authority to work in the United States Apply to Todd Middleton Managing Director OpenHR America LLC 772 Edgewood Ave NE Atlanta GA 30307

SOFTWARE DVLPR/CONSULTANT Dsgn & dvlp client/server & web-based comp applns using C# Visual Basic COM+/DCOM MTS HTML DHTML Oracle XML/XSL & JavaScript on Windows platform Convert project specs & statements of problems & procedures to detailed logical flow charts for coding into comp language Dsgn & dvlp Digital Dashboards using sharepoint portal server Dvlp & write comp progs to store locate & retrieve specific docs data & info Work w/Enterprise appln integration tools Create content mgmt tools & mgmt systems Program web sites BS in Elec Engrng or Comp Sci req'd + 3 yrs in position offered or as a Prog Analyst Sys Analyst or Sftwr Engnr Must have (1) Microsoft certification in FrontPage SE & Visual Inter Dev 6 0 & (2) exp w/SQL Profiler Dvlpr 2000 Web services TOAD Sharepoint portal bizTalk server & Dreamweaver Mx High mobility preferred 40 hrs/wk, OT as req'd 8 am 5 pm $64 240/yr Qualified applicants please submit resume to Site Manager Beaver County Career Link, 2103 Ninth Avenue Beaver Falls PA 16010-3857 Please refer to Job Order No WEB 351036

Systems Analyst to design and develop computer software products (Total Report Management Solutions) using C Visual C++ Java Servlets, HTML, XML and Javascript on Windows based Solaris Linux & OS 390 platforms Analyze software & user requirements alternative solutions design implement software systems, enhance TRMS products, coding standards design documents test procedures & QA test guidelines develop integrated HELP and product documentation Test TRMS products using Jprofiler Jprobe Bounds Checker Purify on Tomcat Apache Iplanet and IBM Websphere web servers on Windows and UNIX platforms Implement TRMS products in ASP COM, NET C and C++ on Windows Design API based TRMS for Java, ASP and COM objects. BS in Science or Engineering + 5 yrs exp in Job Duties Apply Confident Software Inc., 4195 Fellowship Road Tucker, GA 30084-4813 with proof of work authorization.

SAP Analyst - Analyze user requirements, procedures and problems to customize SAP's client/server systems for customers. Analyze current operational procedures identify problems and write detailed descriptions of user needs, program functions and steps req'd to develop or modify SAP computer systems. Must have at least two years experience as SAP Consultant or Systems Analyst. Apply to: BrightStar, 6601 Owens Dr., Suite 115, Pleasanton, CA 94588. ATTN: HR or e-mail to: jobs@brightstar.com

PROGRAMMER ANALYSTS for Worth, IL office. Design & Develop software applications using C++, Oracle, Sybase, XML, UML, Coolgen, Interwoven, ClearCase, ClearQuest, ITS, PVCS, UNIX. Bachelors req'd in Computers, Engineering, math or any related field of study +2 yrs of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Send resume to HR Manager, Core Infosys Technologies, Inc., 7179 West 111th St., Worth, IL 60482

Full time position to work as Programmer Analyst. Experience in ISQL, SQL, PL/ SQL, ABAP/4, Visual Basic, SQL Server 2000/7.0, Oracle 7.x/8.x, Erwin, Taboxp, TOAD, DBArtisan, requires Bachelor's degree in Computer information systems or Engineering or equivalent and 2 years of experience in the job offered. Applicants sent resume to Vital Sciences Inc., 13878 Golden Saddle Court, Carmel, IN 46032

Genesys Conferencing seeks applicants for the position of Database Administrator in Highlands Ranch, CO to design, install, maintain and administer Informix, Sybase and SQL/ Server relational database management systems. Requirements for this position include bachelor's in computer science or related field and DBA experience as well as working knowledge of managing multiple production Informix, SQL/Server and Sybase servers and SQL Backtrack. Respond by resume to: Cheryl Dorman, Genesys Conferencing, 9139 S. Ridgeline Blvd., Highlands Ranch, CO 80129

Software Engineers and Programmer Analysts for S/W company in Chicago, IL. All positions require Bachelor's degree in Comp Science/ Computer Engineering or related field and 1-3 years related experience. Send resume to SystemGuru Inc, 500 North Michigan Avenue, Suite 300, Chicago, IL 60611. Attn: Sowjanya Manacha

Programmers & Software Engineers to analyze, design, develop and test apps in (a) J2EE technologies and related tools EJB, Websphere, XML, XSL, RDBMS, Unix, Clearcase (b) Mainframes COBOL, CICS, JCL, DB2, Java, JDBC, JSP, Servlets (c) VB, ASP, NET Framework, COM+, Javascript/DHTM, SQL Server and related Microsoft technologies, (d) EAI, Webmethods Enterprise and Integration, ColdFusion, SeeBeyond, JMS, JMX, Oracle. US Workers only. Consulting positions requiring travel. Prevailing wage/benefits. Send resume to H.R., 4208 Van Buren Dr. #139, West Des Moines, IA 50266. EOE

Systms Anlyst: Eval, anlyz, desgn, instll, maintn, & monitr netwrk systm, applctn prgrms, security standrds & maint'nce procedrs utilizng LAN, WAN, Exchnge Servrs, Oracle, SQL, WebServr, Cisco Routrs, Lotus, Linux & Win opertng systms. Provd techl & doomnt support. Bach or equiv in Comp Sci., Elec /Comp Engg + 2 yrs exp in job duties. Resp: Sky Bird Travel & Tours, Inc. Attn: HR Manager, 26500 NW Highway, Ste# 260, Southfield, MI 48076. Fax 248-372-4806 e-mail: jobs@skybird-travel.com (Ref to Job Code # ANI3)

PROGRAMMER ANALYSTS for Springfield, IL office. Design & Develop software applications using C++, Oracle, Sybase, XML, UML, Coolgen, Interwoven, ClearCase, ClearQuest, ITS, PVCS, UNIX. Bachelors req'd in Computers, Engineering, Math or related field of study +2 yrs of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Contact HR Manager, Global Infotech Solutions Inc, 826 West Laurel, Suite 1B, Springfield, IL-62704

Programmers to analyze/develop software appls using Oracle Apps, Oracle, PL/SQL, Dev 2000 etc under Windows/UNIX OS, assist in customizing and migrating Oracle App, customize Forms/Reports using Oracle Application standards, document development process. Require BS or foreign equiv in CS/Engg (any branch) & 6 months of exp. In lieu of BS 3yrs of academic studies towards a Bachelor's degree plus 1 yr of exp in IT will be accepted. Travel involved. F/T position. Competitive salary. Resume to HR, Quest America,Inc. 211 East Ontario Street, Suite 1800, Chicago, IL 60611

SBI is looking for the following positions for its offices in Houston, TX, San Francisco, CA, Warren, NJ, Salt Lake City, UT and Portland, OR: Programmer Analysts, Technical Architects, Technical Consultants, Business Strategists, Systems Analysts, Software Engineers. Art Director: resumes by email or fax only to HR, SBI, 2825 East Cottonwood Parkway, Suite 480, Salt Lake City, UT 84121: careers@sbiandcompany.com; Fax (801) 733-3201

Seeking qualified applicants for the following positions in Orlando, FL: Senior Programmer Analyst. Formulate/define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent in computer science, MIS, engineering or related field plus 5 years of experience in systems/applications development. Experience with C++, UNIX and Shell Scripting (Unix Shell Script or Perl Script) also required. (Master's degree in appropriate field will offset 2 years of general experience.) Submit resumes to: Sitx Georgia, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V

Western Computer is looking for Hardware Engineer/ Senior Developer to program manage, provide programming, design, develop and analyze customer programming projects and to develop hardware interfaces. Please send resume, salary requirement to Western Computer, Attention: Diane, 960 Enchanted Way, Simi Valley, CA 93065 or email at: dianas@westerncomputer.com

SYSTEM ANALYSTS for Chicago, IL office. Design, Analyze & Implement software applications to support EH&S/MM/HR/QM/PP modules in SAP R/3 environment using ABAP/4, BAPI, ALE, LSMW, BDC, DCOM, RFC, Oracle, IDOCS, Data Interface, User Exits, C++, Perl and Shell scripting. Bachelors required in Computers, Engineering or related field of study + 2 yrs of related experience. 40 hrs/wk. Must have proof of legal authority to work permanently in the U.S. Please send resume and cover letter to HR Manager, Masterminds Global Solutions, LLC, 6000 Fairview Road, #1200, Charlotte, NC 28210.

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Programmer/Analyst: Designs, develops modifies, and supports MACWIS application using PowerBuilder6.0 with Oracle. Must have BS or equivalent in CS/Math/Engineering or related Must have 2 yrs exp in job offered or or Developing MACWIS appl using PowerBuilder and Oracle Will accept a foreign degree evaluated by a recognized authority as equivalent to a bachelor's degree Must be willing to be assigned to unanticipated client sites throughout the State of Maine Salary $70,000/yr Hrs. 8:00am-5:00pm 40/wk. Please send 2 copies of resume to Bureau of Labor Standards 45 State House Station Augusta Maine 04333- 0045 Please refer to Job Order #39747 for Programmer/Analyst

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REMOTE OPTIMIZATION CONSULTANT

Remote Optimization Consultant need by The Reynolds and Reynolds Company's Tampa, Florida office Consultant specializes in the management of information systems and consulting services for the retail auto industry Duties include performing custom consulting for French-speaking fixed operations of automobile dealerships in regard to the implementation and utilization of an application and providing access to service and parts pricing information for customer pay operations, including prices for parts labor, materials and taxes Analyzing dealers' fixed operations and providing information technology solutions to resolve customer issues Creating and maintaining documentation in French regarding technology solutions and customer correspondence and developing training materials in French including exercises and visual displays Training French-speaking users on software, remotely, or recommending consultants to provide training Associate in Business Administration required with 1 yr exp working in fixed operations of an automobile dealership Must be able to read speak and write French fluently Exp may be gained concurrently in lieu of Associate degree, may have 2 additional yrs of exp Schedule 8:00 a.m. to 5:00 p.m. M-F To apply send resume to S Galbraith, The Reynolds & Reynolds Company 115 South Ludlow St., Dayton, OH 45402 referencing Job Order AA (NO CALLS)

Web Developer

Senior Web Developer- Update & build company web pages, monitor site traffic & effectiveness, & monitor & troubleshoot web system issues. Work with project mgmt to coordinate updates of content & infrastructure Ensure technical integrity & user accessibility of site. Evaluate new software/hardware use in web infrastructure Must have a Bach Deg in Comp Science, Eng'g or related field & 2 yrs exp in the job offered or in a web based development or analysis occup. Must have exp with Java, J2EE, & ATG Dynamo Send resume to Kaplan, Inc. 888 7th Ave New York, NY 10106 Attn Preeti Torres.

SOFTWARE ENGINEER Software engineer to design, develop and test computer programs for business applications, analyze software requirements to determine feasibility of design, direct software system testing procedures using expertise in WebSphere, MQ Series, ClearCase, DB2, XML, ESQL & JMS Requirements: Bachelor's Degree or equivalent in Computer Science in related field and two years experience as a software engineer or computer programmer knowledge of WebSphere MQ Series, ClearCase, DB2, XML, ESQL & JMS Salary: $75,000/year Working Conditions: 8.00 A.M. to 5.00 P.M. 40 hours/week, involves extensive travel and frequent relocation Apply: BECS/CareerLink Program Supervisor: Indiana County CareerLink, 300 Indian Springs Road, Indiana, PA 15701, Job No WEB319750.

Data-Core Group, Inc. delivers innovative IT solutions to business clients nationwide We have immediate full-time opportunities for experienced Programmers, Programmer Analysts, Systems Analysts, Database Designers, and Software Engineers with a Bachelor's degree in Electrical Engineering or Computer Science and one year of experience in any of the following skill sets: PB, EA Server SQL, Oracle or Sybase VB or VC++ or VC# Embedded VC++ MFC net, WinForms, ASP or ASP net, ADO or ADO net, ORACLE SQL Server DB2 or Sybase, in some positions also Crystal Reports or other Report Writer Visual SourceSafe or other version control Rational Rose or other modeling tool MVS JCL COBOL CICS DB2 and Internet related skills such as Java JavaScript, HTML DHTML Oracle & DB2 (UDB 5) Sybase 11 SQL Server 2000 or higher Triggers Stored Proce SQL PL/SQL or equivalent C Pro C or equiv VC# net, COM+ ASP net, XML MSMQ ADO net Java J2EE Javascript EJB CORBA XML MQSeries Websphere DB2 AIX, Solaris or other UNIX in some positions also C/C++ Computer networking & data communications Oracle or other database admin. LAN & WAN networking & server admin on Microsoft & Unix platforms SNMP Frame Relay UNIX, C Socket Interface Network Node Manager TCP/IP Open View Shell scripting Oracle SQL Configuration Management
Will also accept the foreign educational equivalent of degree All positions require frequent travel and relocation throughout the U.S. Excellent benefits Send résumé to 3700 Science Center Ste 203, Philadelphia, PA 19104 Visit our website at www.datacoresystems.com

PROSOFT TECHNOLOGY GROUP INC has immediate full-time multiple opportunities for experienced Programmers Programmer Analysts and Systems Analysts with a Bachelor's degree and one year of experience in three or more of the following
ERP SAP R/3 Functional Modules ABAP/4 Reporting Basis BW SEM CRM SAP Business One SAP Net Weaver C++, Visual C++ Oracle Applications Peoplesoft and Siebel EAI/B2B Integration Beyond and Mercator eSolutions, SAP Portals (Top Tier), Web Logic, Web Sphere iPlanet and J2EE Technologies, Enterprise Reporting, Actuate Crystal Reports Data Warehousing Cognos and Business Objects
We also accept the foreign educational equivalent of the university degree. All positions require frequent travel and relocation throughout the U.S. Send confidential résumé and salary requirements to Ref # Pete - 2004 Attn: HR Manager Prosoft Technology Group, Inc., 2001 Butterfield Road, Suite 1050 Downers Grove IL 60515 Visit our website at www.prosoftgroup.com

SOFTWARE ENGINEER to design, develop, test and implement application software on mainframe and Windows platforms for the retail and manufacturing industries using DB2 COBOL, CICS Visual Basic JCL TSO File-Aid OAM Endevor, Roscoe, Xpeditor Platinum Tools, MS Project and Visio Require: B.S. degree in Computer Science/Engineering or a closely related field with 2 yrs. of exp in the job offered Extensive travel on assignments to various client sites within the U.S. is required. Competitive salary offered Apply by resume to: Sophie Mookerjie, Software Paradigms International Inc., 3901 Roswell Rd. Ste 134, Marietta, GA 30062. Attn: Job RR.

BEA Systems, Inc. currently has opportunities available for the following positions (various levels/types) for locations throughout the U.S. including CA (San Jose & San Francisco); CO (Boulder Denver, Colorado Springs); WA (Seattle & Kirkland); MA (Burlington); and NJ (Liberty Corner)

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Systems Analysts
Database / Systems Administrators
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***Travel may be required**

Please reference CW803 when you apply Send resume to BEA Systems, Inc Attn HR-Staffing 2315 North First Street San Jose CA 95131 Fax (408) 570-8956 E-mail Refer to career section of www.bea.com Principals only EOE

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PROSOFT TECHNOLOGY GROUP INC has immediate full-time multiple opportunities for experienced Programmers Programmer Analysts and Systems Analysts with a Bachelor's degree and one year of experience in three or more of the following
ERP SAP R/3 Functional Modules ABAP/4 Reporting Basis BW SEM CRM SAP Business One SAP Net Weaver C++ Visual C++ Oracle Applications Peoplesoft and Siebel EAI/B2B Integration Beyond and Mercator eSolutions SAP Portals (Top Tier) Web Logic, Web Sphere iPlanet and J2EE Technologies, Enterprise Reporting Actuate Crystal Reports Data Warehousing Cognos and Business Objects
We also accept the foreign educational equivalent of the university degree All positions require frequent travel and relocation throughout the U S Send confidential resume and salary requirements to Ref # Pete - 2004 Attn HR Manager Prosoft Technology Group Inc 2001 Butterfield Road, Suite 1050 Downers Grove IL 60515 Visit our website at www.prosoftgroup.com

COMPUTER
Software Engineer (Multiple positions) Requires Bachelor's Degree in Comp Science Electronic & Electrical Eng or Comp Science & Engineering (for equiv foreign educ) & 3 years' exp in the job offered or 3 years' exp in the design of real-time embedded software in C & Assembly for manufacturing applications Stated exp must include one year with each of the following designing software for automotive applications coordinating software mgmt processes using C M Synergy Clearcase, or PVCS & use of logic analyzers, circuit emulators, & MATLAB/Simulink models of software algorithms Design real-time embedded software in C & Assembly for automotive manufacturing applications 40 hrs /wk. Apply with resume to Delphi Corporation Attn Joseph Zuzula, 3900 Holland Road Saginaw MI 48601

COMPUTER/IT
Systems Administrator (New York, NY) Requires Bachelor's degree (or higher) in Comp Sci MIS or Math & 3 yrs exp in the job offered or 3 yrs exp in Crystal, SQR, & nVision report devel to accommodate ad agency apps on Peoplesoft ERP system All stated exp must include: interfacing media files w/Peoplesoft financials, providing system support for financial closing activities & config time entry & approval groups Develop Crystal, SQR, & nVision reports to accommodate ad agency apps on a customized Peoplesoft ERP system 40 hrs./wk. Apply with resume to: Carey Myers, Publicis, Inc., 14185 North Dallas Parkway, Dallas Texas 75254. Reference Job #2300

Member of Technical Staff - Systems Engineer Design develop and deploy business process models involving WebSphere and Java programming, implement clustering and replication techniques for WebSphere and WebLogic application servers, design and develop applications using web technologies develop UNIX system packages for deployment of various applications in large data centers, develop high performance and fault tolerant interfaces to hundreds of back office systems Requires Bachelors degree or Computer Science and three years experience in the job offered or three years experience or software engineering using Java and including one year using WebSphere Salary $92,850 per year 40 hrs/wk, 8AM to 5PM Monday to Friday To apply submit two (2) copies of your resume to

Case #200202727
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Boston MA 02114

Associate Engineer

Pitney Bowes Inc has an opening in its Stamford, Connecticut office for an Associate Engineer

Responsible for software which is currently being developed for key subsystems of SSPS - Product Anywhere systems Work with the department test coordinator and execute software testing to assure that tools delivered to production will meet specifications.

Must possess at least a bachelor's or its equivalent in Engineering, Computer Science or a related field and relevant work experience as an Engineer including experience with object oriented development methodology Database Development, Test tools, Oracle and SQL, and developing applications using C C++ Visual Basic Powerbuilder Develac 2000 Java ASP and Rational Suite

Resume and/or cover letter must reflect each requirement above and specify reference code AE/4B to 4 will be rejected

Forward resume to Robbin Drew Elliott Pitney Bowes Inc., One Elmcroft Road Stamford, CT 06926-0700

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We invite readers to call or write with their comments and ideas. It is best to submit ideas to one of the department editors and the appropriate beat reporter.

Maryfran Johnson, editor in chief
(508) 820-8179

SEPANTMEST ENITONN

Don Tennant, News editor .... (508) 620-7714
Craig Stedman, assistant News editor .... (508) 820-8120
Mitch Betts, Features editor .... (301) 262-8243
Tommy Peterson, Technology editor .... (508) 620-7729
Jean Consilvio, assistant Management editor .... (508) 820-8562

SEPORTENS

Bob Brewin, mobile computing/wireless; Intel PCs and servers; health care .... (505) 425-3551
Matt Hamblen, networking; network systems management; e-commerce .... (508) 820-8567
Thomas Hoffman, information economics; IT investment and management issues; careers/labor .... (845) 988-9630
Lucas Mearian, financial services; storage; IT management .... (508) 820-8215
Linda Rosencrance, general assignment; transportation/carriers .... (508) 628-4734
Carol Sliwa, Microsoft; Web services technologies; application development; retail industry .... (508) 628-4731
Marc L. Songini, ERP; supply chain; CRM; databases; data warehousing; EAI; CA .... (508) 820-8182
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Dan Verton, federal/state government; legislation critical-infrastructure security; travel .... (703) 321-2277
Jaikumar Vijayan, corporate security/privacy issues; manufacturing .... (630) 978-8390
Todd R. Weiss, general assignment; Linux; messaging/collaboration .... (717) 560-5255

OPINIONS

Mark Hall, Opinions editor .... (503) 391-1158
Frank Hayes, senior news columnist .... (503) 252-0100

FEATUSEN

Ellen Fanning, special projects editor .... (508) 820-8204
Robert L. Mitchell, senior editor .... (508) 820-8177
Mark Hall, editor at large .... (503) 391-1158
Gary H. Anthes, national correspondent .... (703) 536-9233
Julia King, national correspondent .... (610) 532-7599

CSMPNTENWOSLS.COM

Tom Monahan, online director .... (508) 820-8218
Sharon Machlis, managing editor/online .... (508) 820-8231
Ken Mingis, online news editor .... (508) 820-8545
Marian Prokop, online editor at large .... (508) 620-7717
David Ramel, e-mail newsletter/online editor at large .... (508) 820-8269
John R. Brillon, associate art director .... (508) 820-8216
David Waugh, associate art director .... (508) 820-8142

Peter Smith, Web development manager
Kevin Gerich, Mark Savery, Web developers
Bill Rigby, associate Web developer
Matthew Moring, graphics designer

NENEANCH

Mari Keefe, research manager
Gussie Wilson, research associate

CHPY SESK

Jamie Eckle, managing editor/production .... (508) 820-8202
Michele Lee DeFilippo, assistant managing editor/production .... (508) 820-8126
Bob Rawson, Monica Sambataro, senior copy editors
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HNAPSIC OESINS

Stephanie Faucher, design director .... (508) 820-8235
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AOMININTSATIVE SSPPORT

Linda Gorgone, office manager .... (508) 820-8176
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CONTNISSTINH COLNMNINTS

Pimm Fox, Michael Gartenberg, Dan Gillmor, Paul Glen, Thornton A. May, David Moschella, Bart Perkins, Nicholas Petreley, Paul A. Strassmann

CONTRINHTISS WSITESS

Mary Brandel, Amy Helen Johnson, Russell Kay, Sami Lais, Kathleen Melymuka

GENERAL INFORMATION

TELEPHONE/FAX
Main phone number .... (508) 879-0700
All editors unless otherwise noted below
Main fax number .... (508) 875-8931
24-hour news tip line .... (508) 620-7716

E-MAIL
Our Web address is www.computerworld.com.
Staff members' e-mail follows this form: firstname_lastname@computerworld.com.
For IDG News Service correspondents: firstname_lastname@idg.com.

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Page number refers to page on which story begins. Company names can also be searched at www.computerworld.com.

AB INITIO SOFTWARE CORP 42
AD HOC TELECOMMUNICATIONS USERS COMMITTEE 8
AIR CANADA 1
AKONIX SYSTEMS INC. 8
ALPEAN LLC 42
ALLIED DOMECQ PLC 42
ALLMERICA FINANCIAL CORP 42
AMERICA ONLINE INC. 1
AMR RESEARCH INC. 6, 40, 42
ANDA CONSULTING 40
ARGOSY GAMING CO. 25
ASCENTIAL SOFTWARE CORP. 14, 25
AT&T CORP 7
BABSON COLLEGE 41, 25
BAKER HILL CORP 1
BELLSOUTH CORP 1
BMC SOFTWARE INC. 34
BOOZ ALLEN HAMILTON INC. 40
CERTANCE LLC 38
CHALLENGER, GRAY & CHRISTMAS INC. 42
CISCO SYSTEMS INC. 57 25
CITIGROUP CORP. 7
COLLABNET INC. 20
COMMUNICATIONS MANAGERS ASSOCIATION 8
COMPUTER ASSOCIATES INTERNATIONAL INC. 1
CSI CORP 1
CVS INC. 7
DELL INC. 6, 14
DEUTSCHE ASSET MANAGEMENT TECHNOLOGY 45
DEUTSCHE BANK AG 14
DIAGEO PLC 8
DISPORTAL SOFTWARE INC. 40
DOUBLETREE HOTELS 40
EBAGS.COM 20
EBAY INC. 8
ELECTRICAL POWER RESEARCH INSTITUTE 57
ELECTRONIC DATA SYSTEMS CORP. 15
EMBARCADERO TECHNOLOGIES INC. 42
EMC CORP. 1, 40
ERADO.COM 40
EVERGREEN ASSURANCE INC. 1
EXABYTE CORP 32
EXPAND NETWORKS INC. 8
FEDERAL TRADE COMMISSION 40
FIDELITY INVESTMENTS 42
FLIGHT SAFETY INTERNATIONAL INC. 14
FLIGHTSAFETY TEXAS INC. 14
FORBES.COM INC. 1
GALILEO INTERNATIONAL INC. 42
GARTNER INC. 1, 25
GATEWAY INC. 14
GENERAL MOTORS CORP 41
GIGA INFORMATION GROUP INC. 25
GRUPO AB 57
GT NEXUS INC. 8
HANDSPRING INC. 42
HARLEY-DAVIDSON INC. 25
HARRIS CORP 42
HEWLETT-PACKARD CO. 1, 8, 14, 25, 34, 42
HILGRAEVE INC. 10
HUMMINGBIRD LTD. 42
IBM 1, 6, 7, 8, 20, 25, 57
IDC 25, 42
ILLUMINATA INC. 8
INDIANA UNIVERSITY 7
INFORMATION RESOURCES INC. 40
INSTANTSERV LLC 7
INTEL CORP 6, 41, 42
ITWORX INC. 8
J.D. EDWARDS & CO. 8
JACK DALE ASSOCIATES PC 1
JOBLINK SYSTEMS INC. 40
KNIGHTSBRIDGE SOLUTIONS LLC 42
LANDSTAR SYSTEM INC. 14
LEVINE, BLASZAK, BLOCK AND BOOTHBY LLP 8
MANHATTAN RESEARCH LLC 7
MASSACHUSETTS PORT AUTHORITY 1
MASTERCARD INTERNATIONAL INC. 41, 42
MAYFLOWER SOFTWARE INC. 42
MCKESSON CORP 14
MD ANDERSON CANCER CENTER 1
MESSAGEGATE INC. 15
META GROUP INC. 8
METRO-GOLDWYN-MAYER INC. 1
METROSLIDE.COM INC. 42
MICROSOFT CORP. 1, 6, 7, 8, 12, 18, 21, 25, 34, 42
MIS 42, 42
MOTOROLA INC. 42
MUSEUM OF MODERN ART 8
NATIONAL ENERGY MARKETERS ASSOCIATION 57
NEOS USA 14
NETPRO COMPUTING INC. 34
NETWORK APPLIANCE INC. 14
NETWORK ASSOCIATES INC. 1
NEW YORK BOARD OF TRADE 14
NEW YORK MERCANTILE EXCHANGE INC. 14
NEXTEL COMMUNICATIONS INC. 42
NORTHWEST AIRLINES INC. 1
NOVELL INC. 8
O'REILLY AUTOMOTIVE INC. 8
OHIO STATE UNIVERSITY 41, 42
OPEN HARBOR INC. 8
ORACLE CORP 6, 34
OTTAWA REGIONAL CANCER CENTER 1
PACKETEER INC. 8
PALM INC. 42
PEOPLESOFT INC. 8
PEREGRINE SYSTEMS INC. 8
PERSIST NETWORKS INC. 8
PFIZER INC. 14
PRIME CORP 25
PREMIER HEALTHCARE INC. 25
PROGRESS SOFTWARE CORP. 25
RADIOFRAME NETWORKS INC. 57
RATIONAL SOFTWARE CORP 20
RECORDING INDUSTRY ASSOCIATION OF AMERICA 8
RESEARCH IN MOTION LTD. 30
RSA SECURITY INC. 34
RYLAND GROUP PLC 8
SAP AG 1, 8, 14, 40
SEAGATE REMOVABLE STORAGE SOLUTIONS 42
SECURITYPROFILING INC. 8
SIEBEL SYSTEMS INC. 42
SOCIETY FOR INFORMATION MANAGEMENT 8
SOFTWARECEO.COM 42
SONY CORP 40, 42
SPRINT CORP 7
SPRINT SPECTRUM LP 42
STEVENS INSTITUTE OF TECHNOLOGY 41, 42
SUN MICROSYSTEMS INC. 25
SUNGARD DATA SYSTEMS INC. 1
SURESCRIPTS 7
SYGATE TECHNOLOGIES INC. 34
SYMANTEC CORP 1, 15
TANEJA GROUP INC. 14
TECHNOLOGY MANAGERS FORUM 8
TEMPLE UNIVERSITY 41, 42
TERADATA 42
TESSENDERLO KERLEY INC. 40
TEXAS INSTRUMENTS INC. 30
THE BOEING CO. 15
THE DATA WAREHOUSING INSTITUTE 14
THE DEPOSITORY TRUST & CLEARING CORP 1
THE SCO GROUP INC. 7
THE WEITZ CO. 8
TIME INC. 1
TREND MICRO INC. 1
TRILLIUM SOFTWARE 25
U.S. DEPARTMENT OF HOMELAND SECURITY 1, 12
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT 12
U.S. MARINE CORPS 42
UNITED AIR LINES INC. 40
UNIVERSITY OF CALIFORNIA AT LOS ANGELES 41
UNIVERSITY OF TEXAS AT AUSTIN 42, 25
UNIVERSITY OF TEXAS AT HOUSTON 1
VERIO INC. 1
WALL STREET TECHNOLOGY ASSOCIATION 8
WESTIN HOTELS & RESORTS 42
ZIOTECH CORP 1

Emerging Tools Target Blackout Prevention

BY THOMAS HOFFMAN

New technologies under development, such as real-time modeling and simulation systems, could help utilities react swiftly enough to transmission problems to avoid widespread power failures.

But energy industry experts warn that even analytical tools that enable rapid responses to power grid glitches might fall short of preventing the kind of multi-pronged failures that led to the nation's largest-ever blackout earlier this month.

"For that type of situation, events happen faster than we're able to react to them," said Revis James, program manager for the strategic science and technology program at the Electrical Power Research Institute (EPRI), an energy research consortium in Palo Alto, Calif.

> **What we need is a digital grid for the next century.**
>
> CRAIG G. GOODMAN, PRESIDENT, NATIONAL ENERGY MARKETERS ASSOCIATION

In the Works

EPRI is working to build a dynamic, real-time modeling system that would take into account such things as variations in power loads over the course of each day. After completing a three-year effort in 2001 in which it examined the applied mathematics and software needed to support this type of system, EPRI plans in the next few months to issue a request for proposals to develop a first version of the software, James said.

But according to James, there are two formidable challenges: being able to create a simulation in seconds, not hours, and being able to do so by using microprocessor technologies within a distributed computing environment instead of relying on supercomputers or other large-scale processors. "It's not clear if you can do the computations fast enough to do this kind of modeling," he added.

Jill Feblowitz, an analyst at Boston-based AMR Research Inc., agreed that it's uncertain whether computer modeling can be done quickly enough to react to the kinds of problems that triggered the recent blackout, which affected 50 million people in eight states and Canada.

"These things happen so quickly that even if you run a simulation analysis, you might not have enough time, and that's the issue that people are grappling with right now," she said.

There are also existing technologies that haven't been broadly adopted that could help utility operators react faster to grid problems. One of them is called FACTS, or Flexible AC Transmission Systems, a semiconductor-based hardware technology that works like a valve in rerouting the flow of electricity when there's a system overload.

But although the cost of FACTS setups has dropped in recent years, they still can total millions of dollars per unit. "They're not very easy to cost-justify," said Bob Stuart, manager of operations engineering at PG&E Utility in San Francisco. EPRI's James estimates that FACTS technology has been implemented by just "a single-digit percentage" of the U.S. power industry.

Stuart said he believes that most of the analytical tools on the market aren't up to snuff when it comes to dealing with "stressful" grid conditions. Fortunately for PG&E, it came across a robust analytical tool in 2000 from a vendor called Grupo AIA in Barcelona, Spain. After four months of pilot testing, PG&E in mid-2001 purchased the software, which runs on a cluster of four-CPU IBM workstations, said Stuart. He said the cost of the software, including installation, was just under $1 million.

Even with the advent of technologies designed to help automate and link interconnected transmission systems, many industry experts contend that the underlying power-grid infrastructure is still woefully inadequate.

"Our grid system was built for the Industrial Revolution. What we need is a digital grid for the next century," said Craig G. Goodman, president of the National Energy Marketers Association, a nonprofit trade organization in Washington.

Goodman claimed that efforts to expand and modernize the nation's electrical and gas grids have been stalled by environmental groups and political interests.

Computerworld's Matt Hamblen contributed to this story.

MORE ONLINE

Congress plans to investigate the blackout and the grid's vulnerability to cyberattack
QuickLink 40774

Telecom union lambasts the performance of Verizon's network during the blackout.
QuickLink 40824
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Continued from page 1

Blackout

terprises since Sept. 11, 2001, have clearly enabled them to respond to the crisis in an effective manner," she wrote.

But while tens of millions of dollars spent by companies on redundant networks, computer systems, storage-area networks (SAN) and long-distance data replication may have protect data, it was often the most obvious things that caused the best-laid disaster recovery plans to go awry.

Jurgensen said Time didn't lose data and the company's disaster recovery plan worked as it was expected to. But he added that he had no lighting in his network operations center, diesel generator fuel-pump room or the mechanical equipment room because they weren't hooked up to generator power. "We didn't have any portable radios. We could have used more flashlights," he said.

Sean O'Brien, manager of information systems at Ottawa Regional Cancer Center, lost his Microsoft Exchange Server and another critical server because a downed air-conditioning unit leaked an inch of water onto the floor of his data center. O'Brien said he was able to restore the data onto two new servers from a SAN he installed last year from Xiotech Corp. in Eden Prairie, Minn.

"The flooding we had came from one area of the ceiling," he said. "The thing to do is make sure the SAN is on one side of room and the servers are on the other. If we'd lost the SAN, we would have had our tape backup, and that's stored on another campus. But you can build only so much redundancy, based on your budget."

Edward Koplin, an engineer at Jack Dale Associates PC, an engineering firm in Baltimore, said a lack of disaster testing is the No. 1 cause of data center failures. Koplin suggested that companies test their diesel generators often and at full load for as long as they're expected to be in use.

"You must consider your engine plant your primary source of power and consider the utility your preferred source of power," said Koplin, whose firm designs backup power systems for corporate data centers.

Jurgensen said Time's critical systems stayed up because "our CTO demands we test our generators once a month. We don't just test them for 40 minutes; we run them anywhere from two to four hours."

Forbes.com's Smith said one lesson he thinks many IT managers will have learned from the outage is that outsourcing services can be the difference between continuing to operate and sitting around in the dark.

Smith said his online publication and e-mail broadcasts didn't so much as hiccup because he outsources his network operations to Verio Inc. in Englewood, Colo., and uses Evergreen Assurance Inc. in Annapolis, Md., to provide a fail-over e-mail service.

"The centerpiece to our being operational throughout this was our ability to communicate through e-mail," he said. "People who have their own data center will be forced to consider whether having that data center on their own premises will be worth it."

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(508) 820-8179

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Craig Stedman, assistant News editor (508) 820-8120
Mitch Betts, Features editor (301) 262 8243
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Jean Cumiskey, assistant Management editor (508) 820-8562

REPORTERS

Bob Brewin, mobile computing/wireless, Intel PCs and servers, health care (505) 425 3551
Matt Hamblen, networking, network systems management, e-commerce (508) 820-8567
Thomas Hoffman, information economics, IT investment and management issues, careers, labor (845) 988 9630
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Linda Rosencrance, general assignment, transportation, carriers (508) 628 4734
Carol Sliwa, Microsoft, Web services technologies, application development, retail industry (508) 628 4731
Marc L. Songini, ERP, supply chain, CRM, databases, data warehousing, EAI, CA (508) 820-8182
Patrick Thibodeau, enterprise systems, outsourcing and immigration issues, corporate antitrust issues (202) 333-2448
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Todd R. Weiss, general assignment, Linux, messaging/collaboration (717) 560 5255

OPINIONS

Mark Hall, Opinions editor (503) 391 1158
Frank Hayes, senior news columnist (503) 252 0100

FEATURES

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RESEARCH

Mari Keefe, research manager
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COPY DESK

Jamie Eckle, managing editor/production (508) 820-8202
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CONTRIBUTING COLUMNISTS

Penn Fox, Michael Gartenberg,
Don Gillmor, Paul Glen, Thornton A. May,
David Menzhello, Bart Perkins,
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CONTRIBUTING WRITERS

Mary Brandel, Amy Helen Johnson, Russell Kay,
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GENERAL INFORMATION

TELEPHONE/FAX

Main phone number . . . (508) 879-0700
All editors unless otherwise noted below
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E-MAIL

Our Web address is
www.computerworld.com.
Staff members' e-mail follows this form:
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48 INTO SOFTWARE CORP 20
AD HOC TELECOMMUNICATIONS
USERS COMMITTEE 9
AIR CANADA 1
AKONIX SYSTEMS INC 8
ALMEAN LLC 49
ALLIED DOMECQ PLC 42
ALLMERICA FINANCIAL CORP 42
AMERICA ONLINE INC 1
AMR RESEARCH INC 8, 48, 57
ANDA CONSULTING 44
ARGOSY GAMING CO 29
ASCENTIAL SOFTWARE CORP 14, 26
AT&T CORP 7
BABSON COLLEGE 41, 42
BAKER HILL CORP 1
BELLSOUTH CORP 1
BMC SOFTWARE INC 34
BOOZ ALLEN HAMILTON INC 42
CERTANCE LLC 20
CHALLENGER, GRAY & CHRISTMAS INC 49
CISCO SYSTEMS INC 37, 49
CITIGROUP CORP 1
COLLABNET INC 20
COMMUNICATIONS MANAGERS ASSOCIATION 8
COMPUTER ASSOCIATES INTERNATIONAL INC 1
CSX CORP 1
CVS INC 7
DELL INC 8, 14
DEUTSCHE ASSET MANAGEMENT TECHNOLOGY 41
DEUTSCHE BANK AG 41
DIAGEO PLC 6
DISPORTAL SOFTWARE INC 20
DOUBLETREE HOTELS 49
EBAYS COM 20
EBAY INC 8
ELECTRICAL POWER RESEARCH INSTITUTE 57
ELECTRONIC DATA SYSTEMS CORP 16
EMBARCADERO TECHNOLOGIES INC 26
EMC CORP 1, 49
ERADO COM 20
EVERGREEN ASSURANCE INC 1
EXABYTE CORP 20
EXPAND NETWORKS INC 8
FEDERAL TRADE COMMISSION 20
FIDELITY INVESTMENTS 42
FLIGHT SAFETY INTERNATIONAL INC 14
FLIGHTSAFETY TEXAS INC 16
FORBES COM INC 1
GALILEO INTERNATIONAL INC 49
GARTNER INC 1, 20
GATEWAY INC 18
GENERAL MOTORS CORP 41
GEBA INFORMATION GROUP INC 29
GRUPO AIA 57
GT NEXUS INC 8
HANDSPRING INC 20
HARLEY DAVIDSON INC 25
HARRIS CORP 37
HEWLETT-PACKARD CO 1, 8, 14, 32, 34, 48
HUBRAEVE INC 14
HUMMINGBIRD LTD 25
IBM 1, 6, 7, 8, 25, 32, 57
IDC 26, 48
ILLUMINATA INC 8
INDIANA UNIVERSITY 7
INFORMATION RESOURCES INC 42
INSTANTOX LLC 7
INTEL CORP 8, 48, 42
ITWORK INC 8
J.D. EDWARDS & CO 8
JACK DALE ASSOCIATES PC 1
JOBLINK SYSTEMS INC 49
KNOWNTSBRIDGE SOLUTIONS LLC 26
LANDSTAR SYSTEM INC 14
LEVINE, BLASZAK, BLOCK AND BOOTHBY LLP 8
MANHATTAN RESEARCH LLC 7
MASSACHUSETTS PORT AUTHORITY 1
MASTERCARD INTERNATIONAL INC 41, 42
MAYFLOWER SOFTWARE INC 20
MCKESSON CORP 14
MD ANDERSON CANCER CENTER 1
MESSAGEGATE INC 16
META GROUP INC 8
METRO-GOLDWYN-MAYER INC 1
METROGUIDE COM INC 49
MICROSOFT CORP 1, 6, 7, 8, 12, 19-21, 25, 34, 37
MIT 41, 42
MOTOROLA INC 48
MUSEUM OF MODERN ART 8
NATIONAL ENERGY MARKETERS ASSOCIATION 57
NERS-USA 41
NETPRO COMPUTING INC 34
NETWORK APPLIANCE INC 14
NETWORK ASSOCIATES INC 1
NEW YORK BOARD OF TRADE 14
NEW YORK MERCANTILE EXCHANGE INC 16
NEXTEL COMMUNICATIONS INC 37
NORTHWEST AIRLINES INC 1
NOVELL INC 8
O'REILLY AUTOMOTIVE INC 8
OHIO STATE UNIVERSITY 41, 42
OPEN HARBOR INC 8
ORACLE CORP 8, 34
OTTAWA REGIONAL CANCER CENTER 1
PACKETEER INC 8
PALM INC 30
PEOPLESOFT INC 8
PEREGRINE SYSTEMS INC 8
PERSIST NETWORKS INC 8
PFIZER INC 14
PIMLE CORP 57
PREMIER HEALTHCARE INC 25
PROGRESS SOFTWARE CORP 26
RADIOFRAME NETWORKS INC 37
RATIONAL SOFTWARE CORP 26
RECORDING INDUSTRY ASSOCIATION OF AMERICA 8
RESEARCH IN MOTION LTD 30
RSA SECURITY INC 34
RYLAND GROUP PLC 8
SAP AG 1, 8, 14, 48
SEAGATE REMOVABLE STORAGE SOLUTIONS 29
SECURITYPROFILING INC 8
SIEBEL SYSTEMS INC 48
SOCIETY FOR INFORMATION MANAGEMENT 8
SOFTWAREGEO.COM 49
SONY CORP 20, 32
SPRINT CORP 7
SPRINT SPECTRUM LP 30
STEVENS INSTITUTE OF TECHNOLOGY 41, 42
SUN MICROSYSTEMS INC 49
SUNBARD DATA SYSTEMS INC 1
SURESCRIPTS 7
SYDATE TECHNOLOGIES INC 34
SYMANTEC CORP 1, 16
TANEJA GROUP INC 14
TECHNOLOGY MANAGERS FORUM 8
TEMPLE UNIVERSITY 41, 42
TERADATA 26
TESSENDERLO KERLEY INC 48
TEXAS INSTRUMENTS INC 30
THE BOEING CO 16
THE DATA WAREHOUSING INSTITUTE 14
THE DEPOSITORY TRUST & CLEARING CORP 1
THE ISO GROUP INC 7
THE WEITZ CO 8
TIME INC 1
TREND MICRO INC 1
TRILLIUM SOFTWARE 29
U.S. DEPARTMENT OF HOMELAND SECURITY 1, 12
U.S. DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT 16
U.S. MARINE CORPS 30
UNITED AIR LINES INC 42
UNIVERSITY OF CALIFORNIA AT LOS ANGELES 41
UNIVERSITY OF TEXAS AT AUSTIN 41, 42
UNIVERSITY OF TEXAS AT HOUSTON 1
VERIO INC 1
WALL STREET TECHNOLOGY ASSOCIATION 6
WESTIN HOTELS & RESORTS 48
XOTECH CORP 1

ADVERTISER'S INDEX

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www.ibm.com
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www.intalio.com
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www.iss.net
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www.itexecutivesummit.com
Microsoft Windows Server 2003 10-11
www.microsoft.com
Nokia 36
www.nokia.com
Robert Half Technology 40
www.roberthalftechnology.com
SAP 30
www.sap.com
SNW Fall Conference 2003 ..... 28, 46
www.snwfall.com
Storage Tek 29
www.StorageTek.com
Tandberg 37
www.tandberg.com

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Emerging Tools Target Blackout Prevention

BY THOMAS HOFFMAN

New technologies under development, such as real-time modeling and simulation systems, could help utilities react swiftly enough to transmission problems to avoid widespread power failures.

But energy industry experts warn that even analytical tools that enable rapid responses to power grid glitches might fall short of preventing the kind of multi-pronged failures that led to the nation's largest-ever blackout earlier this month.

"For that type of situation, events happen faster than we're able to react to them," said Revis James, program manager for the strategic science and technology program at the Electrical Power Research Institute (EPRI), an energy research consortium in Palo Alto, Calif.

"What we need is a digital grid for the next century."

CRAIG G. GOODMAN, PRESIDENT NATIONAL ENERGY MARKETERS ASSOCIATION

In the Works

EPRI is working to build a dynamic, real-time modeling system that would take into account such things as variations in power loads over the course of each day. After completing a three-year effort in 2001 in which it examined the applied mathematics and software needed to support this type of system, EPRI plans in the next few months to issue a request for proposals to develop a first version of the software, James said.

But according to James, there are two formidable challenges: being able to create a simulation in seconds, not hours, and being able to do so by using microprocessor technologies within a distributed computing environment instead of relying on supercomputers or other large-scale processors. "It's not clear if you can do the computations fast enough to do this kind of modeling," he added.

Jill Feblowitz, an analyst at Boston-based AMR Research Inc., agreed that it's uncertain whether computer modeling can be done quickly enough to react to the kinds of problems that triggered the recent blackout, which affected 50 million people in eight states and Canada.

"These things happen so quickly that even if you run a simulation analysis, you might not have enough time, and that's the issue that people are grappling with right now," she said.

There are also existing technologies that haven't been broadly adopted that could help utility operators react faster to grid problems. One of them is called FACTS, or Flexible AC Transmission Systems, a semiconductor-based hardware technology that works like a valve in rerouting the flow of electricity when there's a system overload.

But although the cost of FACTS setups has dropped in recent years, they still can total millions of dollars per unit. "They're not very easy to cost-justify," said Bob Stuart, manager of operations engineering at PG&E Utility in San Francisco. EPRI's James estimates that FACTS technology has been implemented by just "a single-digit percentage" of the U.S. power industry.

Stuart said he believes that most of the analytical tools on the market aren't up to snuff when it comes to dealing with "stressful" grid conditions. Fortunately for PG&E, it came across a robust analytical tool in 2000 from a vendor called Grupo AIA in Barcelona, Spain. After four months of pilot testing, PG&E in mid-2001 purchased the software, which runs on a cluster of four-CPU IBM workstations, said Stuart. He said the cost of the software, including installation, was just under $1 million.

Even with the advent of technologies designed to help automate and link interconnected transmission systems, many industry experts contend that the underlying power-grid infrastructure is still woefully inadequate.

"Our grid system was built for the Industrial Revolution. What we need is a digital grid for the next century," said Craig G. Goodman, president of the National Energy Marketers Association, a nonprofit trade organization in Washington.

Goodman claimed that efforts to expand and modernize the nation's electrical and gas grids have been stalled by environmental groups and political interests. ▶

Computerworld's Matt Hamblen contributed to this story

MORE ONLINE

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Continued from page 1

Blackout

terprises since Sept. 11, 2001, have clearly enabled them to respond to the crisis in an effective manner," she wrote.

But while tens of millions of dollars spent by companies on redundant networks, computer systems, storage-area networks (SAN) and long-distance data replication may have protect data, it was often the most obvious things that caused the best-laid disaster recovery plans to go awry.

Jurgensen said Time didn't lose data and the company's disaster recovery plan worked as it was expected to. But he added that he had no lighting in his network operations center, diesel generator fuel-pump room or the mechanical equipment room because they weren't hooked up to generator power. "We didn't have any portable radios. We could have used more flashlights," he said.

Sean O'Brien, manager of information systems at Ottawa Regional Cancer Center, lost his Microsoft Exchange Server and another critical server because a downed air-conditioning unit leaked an inch of water onto the floor of his data center. O'Brien said he was able to restore the data onto two new servers from a SAN be installed last year from Xiotech Corp. in Eden Prairie, Minn.

"The flooding we had came from one area of the ceiling," he said. "The thing to do is make sure the SAN is on one side of room and the servers are on the other. If we'd lost the SAN, we would have had our tape backup, and that's stored on another campus. But you can build only so much redundancy, based on your budget."

Edward Koplin, an engineer at Jack Dale Associates PC, an engineering firm in Baltimore, said a lack of disaster testing is the No. 1 cause of data center failures. Koplin suggested that companies test their diesel generators often and at full load for as long as they're expected to be in use.

"You must consider your engine plant your primary source of power and consider the utility your preferred source of power," said Koplin, whose firm designs backup power systems for corporate data centers.

Jurgensen said Time's critical systems stayed up because "our CTO demands we test our generators once a month. We don't just test them for 40 minutes; we run them anywhere from two to four hours."

Forbes.com's Smith said one lesson he thinks many IT managers will have learned from the outage is that outsourcing services can be the difference between continuing to operate and sitting around in the dark.

Smith said his online publication and e-mail broadcasts didn't so much as hiccup because he outsources his network operations to Verio Inc. in Englewood, Colo., and uses Evergreen Assurance Inc. in Annapolis, Md., to provide a fail-over e-mail service.

"The centerpiece to our being operational throughout this was our ability to communicate through e-mail," he said. "People who have their own data center will be forced to consider whether having that data center on their own premises will be worth it." ▶

Checklist

Tips on how to avoid recovery breakdowns:

KEEP application servers, backup servers and tape libraries isolated from one another.

UPGRADE backup power systems to keep pace with data center power consumption.

TEST generators at full load for the length of time you expect to use them in an emergency.

MAKE SURE critical areas such as network operations centers are connected to alternate power sources.

HAVE walkie-talkies available. Phones will likely be too cumbersome for fast communications.

HAVE two additional power generators on hand as backups.

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Solving the problems with the North American electric power grid will take years and require tens of billions of dollars.

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Sure, you've got a big-picture disaster recovery plan. But little things count, too — so here's a list of items that may fill some small but critical gaps the next time around.

Radios for listening. When the power goes out, you need information. How bad is it? How widespread? When will the juice come back on? Get a few cheap, battery-powered radios to make sure you have access to whatever information is available. Then test them to make sure you can actually receive local radio broadcasts inside your office or data center.

Radios for talking. You count on your cell phone for communications in an emergency, right? You shouldn't. In emergencies, cell networks get overloaded. In an extended blackout, battery backups for cellular base stations run down. Pick up a few kids' walkie-talkies to use as intercoms. Forget the expensive kind — these just need to work within your department.

Phones that don't require external power, on phone lines connected directly to the telephone network. Telephone service usually stays up after the lights go out, but if phones or switchboards require external power, you can't use it. Get a direct line for IT if you don't have one already and attach a no-frills phone to it.

A low-power PC on a high-powered UPS (uninterruptible power supply), with an internal modem and its own direct phone line. An old laptop will probably do — and on a good UPS, it could run for hours. Add a cheap dial-up account with a national Internet service provider, and you'll be able to send and receive e-mail and get information from the Web long before your own network is back up again.

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

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Updated blackout procedures – on paper. In a crisis, even smart people can forget the obvious. Print out step-by-step instructions and put them in bright-red loose-leaf binders. Then attach a cheap flashlight to each binder with Velcro-fasteners. Even step-by-step instructions are no good if it's too dark to read them.

A designated employee to check these items every month. That means printing out new copies of contact lists and blackout procedures, updating binders, switching on flashlights and radios to test them, counting spare batteries and replacing equipment and supplies that have gone missing.

Yes, that employee time is the most expensive item on the list. But it's the one place you don't want to cheap out — so you'll get the benefit of the rest of your preparations the next time the lights go out. ◗

What's Really Important

The new wireless access point for this small office is working fine when pilot fish installs it. But a week later the secretary calls to complain that it's almost unusable because of low signal strength. Over-the-phone troubleshooting isn't working until fish tells her to try adjusting the antenna. "That would be difficult," she says. "I moved my fountain in front of it. You know, the big metal one with all the plants on it? It's great – you can't even see that box or its antennas at all."

SHARK TANK

Oops!

Design director at this textile distribution company asks IT manager pilot fish for a big favor: An out-of-state designer needs access to the archives, which are all in filing cabinets. Fish launches a crash project to spec out the database, pulls resources to get it implemented and gets people trained. But two weeks later, no data is in the database. Why? asks fish. "Oh, we won't be able to use it after all," says design director. "We just aren't data-entry types."

Because It's New?

County government pilot fish gets a note from a network tech saying that, after two weeks of testing, new network drivers that will support Gigabit Ethernet have been certified for use on the county's network. Fish responds, "Where is Gigabit Ethernet being used on campus? I'd like to see how it affects their subnet, to see if I would benefit by using it in my little corner of the network." Net tech's reply: Gigabit Ethernet isn't used anywhere on the network. "Then what's the benefit of installing them if we can't use them?" fish asks – and is still waiting for an answer.

Scope Creep

Developer pilot fish gets dinged by boss on his annual review for "failure to go above and beyond to satisfactorily meet users' needs." So on his next assignment, fish suggests several logic and data fields the user didn't think of – and the user is very happy with the end result. And fish? "I was disciplined by my boss," fish groans, "for going 'out of scope' on the original request."

The Marine Corps Way

It's the early 1970s, and this pilot fish at Marine Corps headquarters is programming away to make final connections for the new mainframe when his boss walks by fish's open door. Minutes later, he summons fish to his office. "You're an officer," boss says. "Your job is to supervise. You have enlisted Marines to do the typing." Fish nods in agreement, salutes smartly, returns to his office – and moves his desk so it can no longer be seen from the door.

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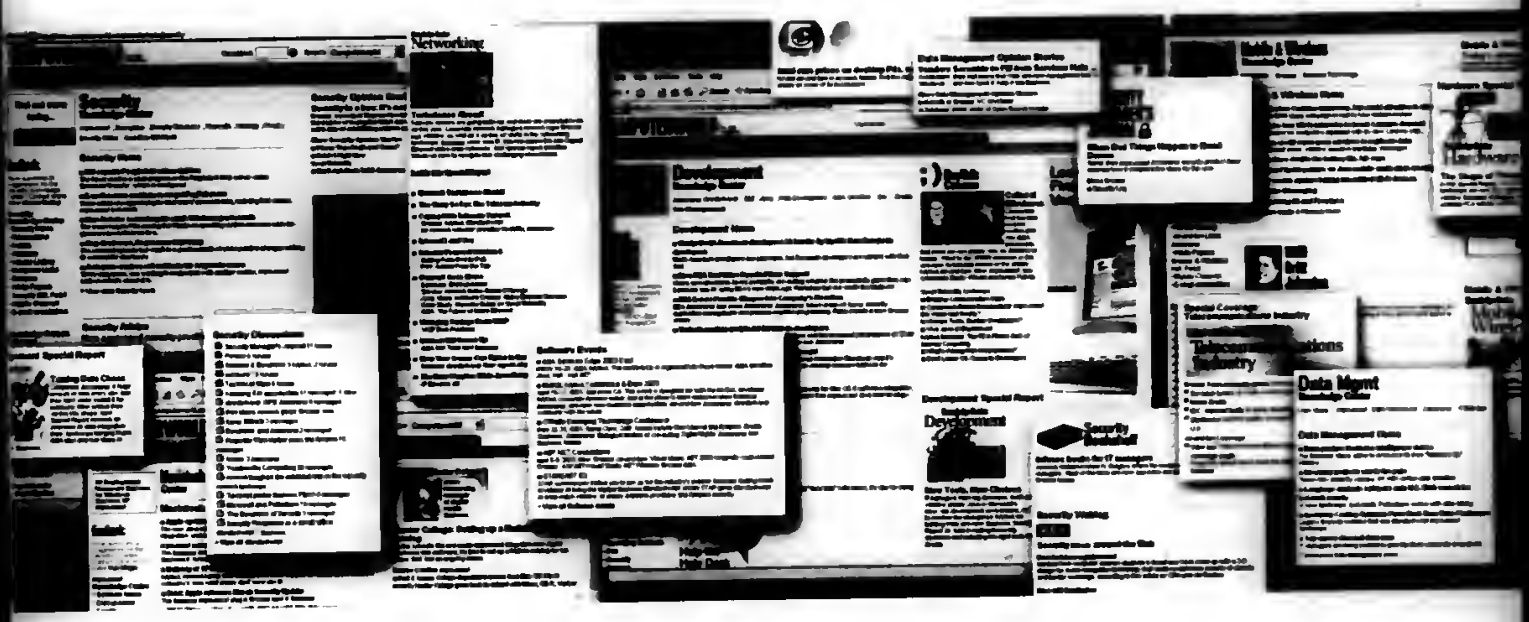

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